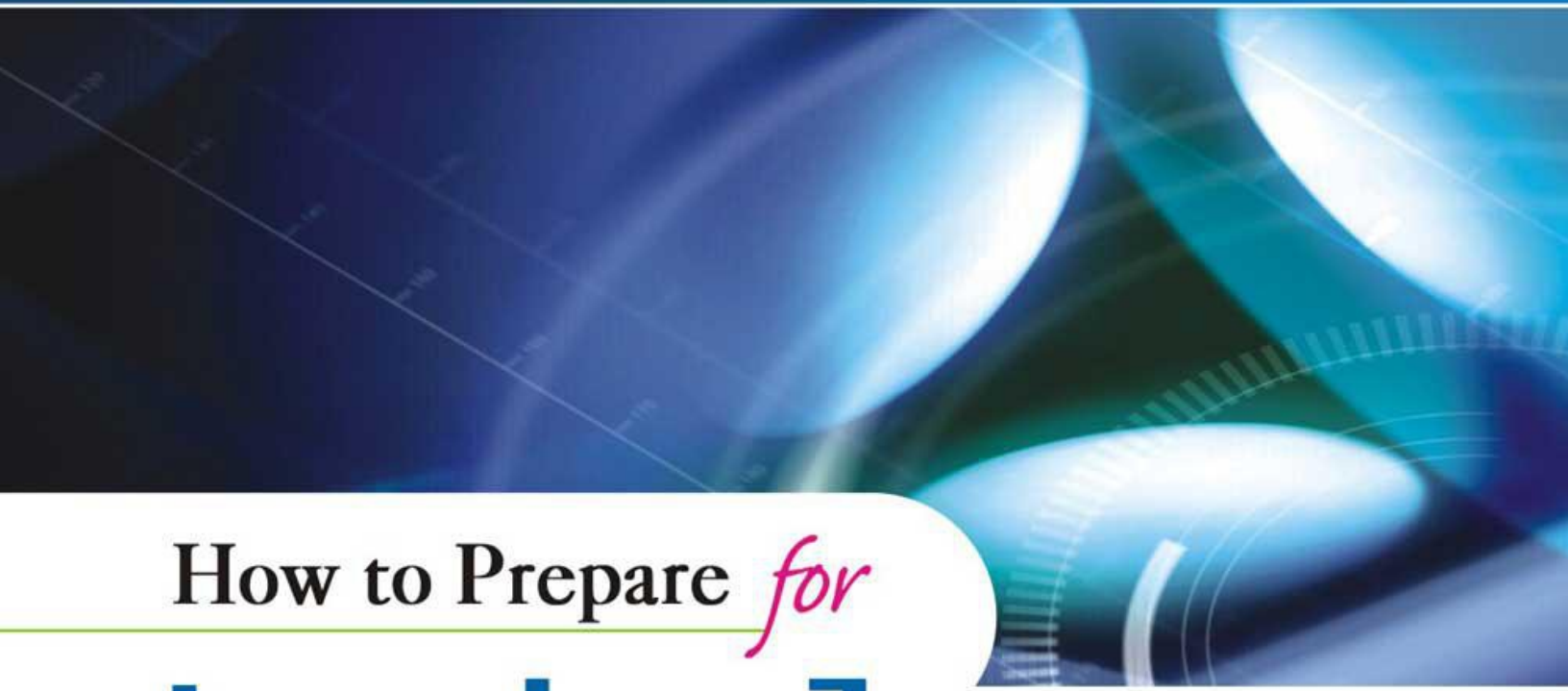


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SERIES



How to Prepare *for*

Logical Reasoning *for the*

CAT

COMMON
ADMISSION
TEST

Arun Sharma

McGRAW HILL EDUCATION



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**Logical
Reasoning** *for the*
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Preface

As a trainer and an author of various books on aptitude, I have always noticed the lack of a quality resource for students trying to develop their skills in solving reasoning questions. Students preparing for the CAT and other aptitude tests usually struggle for appropriate study material and advisory resources when it comes to preparing for this all important area of the examination.

THE CRUCIAL ROLE OF LOGICAL REASONING IN THE CAT

Logical Reasoning has always been an integral part of the CAT and indeed of all other MBA entrance examinations. However, ever since the CAT went online in 2009, the emphasis of the exam on Logical Reasoning questions has drastically increased. The following table would show you how the CAT has moved on to an exam with greater role in Logical Reasoning.

This shift can be gauged from the following table which shows the number of Logical Reasoning questions in the three-section format of the CAT (where Data Interpretation and Logical Reasoning formed one of the three sections):

Year	Number of Sets in Logical Reasoning	Number of Questions in Logical Reasoning (out of the total DI & Logical Reasoning section)
2006	1	5/25
2007	0	0/25
2008	1	3/25
2009 & 2010	3–4	6–7/20

The increased emphasis can be further gauged from the following:

In the exams before 2009, in order to qualify you typically needed to solve anywhere between 10 to 12 questions correct out of 25—which in effect meant that the key qualifying factor for the section was essentially the Data Interpretation questions.

In the online CATs of 2009 and 2010, the number of questions one needed to solve in order to qualify

the DI & LR section was around 12–14 out of 20, which naturally made Logical Reasoning an important component of your process of qualification for this section.

Importance of Logical Reasoning in the two-section CAT:

From the year 2011 onwards, the CAT has shifted to the two-section format namely:

- (i) Quantitative Aptitude and Data Interpretation comprising 30 questions
- (ii) Verbal Ability and Logical Reasoning comprising 30 questions

In my view, this has significantly increased the strategic importance of Logical Reasoning in cracking the CAT. The reasons for this view point are not hard to trace. Consider the following:

- (i) Out of 30 questions in the Verbal Ability and Logical Reasoning section, typically every test paper has around 20 questions on Verbal Ability/Reading Comprehension and 10 questions on Logical Reasoning.
- (ii) An aspirant needs to attempt around 18+ questions all correct to score a 99+ percentile. At the same time, at an accuracy level of around 90%, (which has been seen to be the normal level for good students) he/she needs to attempt around 22-24 questions.
- (iii) Given the fact that all questions in Verbal Ability/ Reading Comprehension would not be attemptable, it naturally means that Logical Reasoning becomes a critical component in order to crack one of the two sections in the exam.

This can be further looked at in two ways:

- (a) For the student who is weak at solving Verbal Ability/ Reading Comprehension questions.

If you were to look at it from another angle, suppose one is able to solve all 10 questions on Logical Reasoning correctly (which I may add here, is not very difficult to achieve) the consequence would be that the pressure would be off when you come around to solving the Verbal Ability/ Reading Comprehension questions in the section. Out of 20 questions in these, you would need to be able to solve only 8–10 all correct and you would be heading to a pretty strong score.

Naturally, this would allow you to be stress free during the exam and help you achieve better scores in this section.

- (b) For the student who is good at solving Verbal Ability/ Reading Comprehension questions.

Let's assume you are able to solve around 15 questions, with a maximum of one error out of the 20 questions from these areas. In such a case, you would need to be able to 'attack' the logical reasoning questions in order to maximise your scores in this section.

Another aspect to be noted is that the questions on Logical Reasoning included in all the papers of the online CAT have been pretty complex with conditions which needed a lot of thinking to be matched in the correct places. Moreover, each set typically contained a maximum of two questions and a lot of sets had only one question in them. Thus, working on your reasoning solving skills becomes a key imperative if you are a serious CAT aspirant.

🔍 THE CRUCIAL ROLE OF REASONING IN OTHER MBA EXAMS AND OTHER PARALLEL APTITUDE EXAMS

Reasoning also forms one of the main parts of parallel MBA entrance examinations like

- (i) XAT—where there are two full sections where there is a role for Reasoning namely:
 - (a) A section on Analytical Reasoning and Decision Making &
 - (b) A section called Verbal Ability and Logical Reasoning.
- (ii) SNAP—which has one full section of 25 to 30 questions regularly titled as ‘Analytical and Logical Reasoning’
- (iii) IIFT—which has one section dedicated to Reasoning and contains around 20 to 25 questions on an average.
- (iv) IRMA—which again has one full section of around 40 questions based entirely on reasoning titled ‘Analytical Reasoning’.
- (v) CET Maharashtra—has close to 75 to 80 questions (out of 200 in the entire paper) which are solely dedicated to reasoning.

Besides, all other competitive aptitude exams like the Civil Services Aptitude test (CSAT), Bank PO Exams, etc. have a fair abundance of reasoning questions.

Thus, even if you are a CAT aspirant who is also aiming for some or all of these other exams, you would ignore reasoning preparation at your own peril.

THE SKILLS DEVELOPMENT APPROACH TO REASONING

Unlike proper theory-oriented subjects, like physics, biology or mathematics where a substantial part of your preparation would involve studying the theory of the subject before moving to its applications, Reasoning is largely an experientially learnt subject, i.e. a subject learnt largely through experience. Hence, the standard objective while solving a reasoning question has to hover around being able to develop your skills in being able to process and solve reasoning questions.

This entire book tries to help you:

- (a) Experience what the different question types on reasoning are all about
- (b) Develop the best processes and thinking patterns in order to be able to solve the questions;
- (c) Experience enough situations of each question type such you can say with confidence “Now, I can solve any question of this type”.

However, I would first like to bring your attention to a very less understood issue about the preparation for the Reasoning section.

The degree of control you have while solving a Reasoning question is a crucial aspect of decision making while attempting Reasoning questions.

My experience and observation of preparation trends and student processes used in solving reasoning questions tell me that most aspirants lose a degree of control they have on a question. Whether a question is within one’s grasp and one would be able to solve a question or not, is something that aspirants realise too late into the question. By the time they realise that a question set was not worth investing the time, they would have already invested too much time in a futile attempt to solve the question.

In the question sets that appear as a part of the Reasoning in the CAT and other non-CAT exams, realising early whether a question set is going to get solved by you should be a crucial aspect of your

preparation objectives.

Hence, the ability to pinpoint whether you would be able to solve a question set while you are going through it for the first time could be a big differentiator and could go a long way towards improving your test scores.

There are a few concrete steps you can specifically do for Reasoning:

(a) **Work on developing an advanced warning system about the difficulty level of a question.**

The problem that students face in segregating reasoning questions is that since they are all language intensive, they all look the same. This is the reason test-takers face a problem in understanding whether a question set is to be solved or not.

(b) **You would have to use all the information in most reasoning questions that you come across.**

This assumption holds true because redundant data questions are very rarely found.

(c) **The first thing you should look at in the question is the number of variables involved.**

Typically, more the variables, more difficult the question is likely to be.

Given this, your approach to every reasoning question should be based on a sentence-by-sentence analysis of the question. Look at the clues closely and for each statement you come across, try to see whether it is a direct or an indirect clue. Direct clues would typically give you direct relationships between the variables involved and hence are easy to place (something like, “Amit is wearing the red shirt,” is a direct clue).

Indirect clues, on the other hand, are much more difficult to place and have to be used at specific points in solving a problem. (A typical indirect clue would read something like: “The person wearing the blue shirt lives somewhere to the right of the person who hates coffee and he is not Amar”)

Naturally, higher the proportion of direct clues, the easier the question would be. On the other hand, if the indirect clues are higher, the question starts becoming more and more difficult to solve and this single fact should go a long way towards helping you distinguish the tough reasoning questions from the easy ones.

THE STRUCTURE AND SALIENT FEATURES FOR THIS BOOK

This book is divided into the following parts:

Part 1: Logical Reasoning

This part is divided into three broad sections:

Section (1) Logical Reasoning: This section starts with an introduction to logical reasoning and then moves on to cover the various question types that one is likely to encounter under Logical Reasoning. These are: Logical Reasoning based on Arrangements, Logical Reasoning based on Rankings, Team Formations, Quantitative Reasoning and Puzzle test.

The objective of this section is to help you understand the various question types that one would typically see under Logical Reasoning—which is the most common question type inside the CAT and is also commonly seen in all other major aptitude exams.

Section (2) Verbal Reasoning: The question types covered under the Verbal Reasoning Section are:

Syllogisms; Logical Deductions; Set Theory, Venn Diagrams and Network Diagrams; Binary Logic
Critical Reasoning.

Again, the objective in this section is to help the reader to understand the various question types that are classified under verbal reasoning (and which are relevant from the CAT view point).

Section (3) Reasoning Exercises based on Level of Difficulty: In this section of the book you would find exercises in increasing level of difficulty starting from LOD 1 to LOD 2 to LOD 3 (where LOD = Level Of Difficulty). These exercises help you put a final stamp on your understanding and ability to solve reasoning questions at varying levels of difficulty.

Part 2: Reasoning Question Types from Other MBA Exams

This part of the book takes you through the reasoning question types that have not been popular in the CAT but have been a constant presence in other MBA entrance exams. However, these have been covered inside this book for two reasons:

- (a) With the evolving nature of the CAT, it is a good idea to know what kind of surprise questions can crop up in each
- (b) In my experience, I have seen that a lot of people who appear for the CAT also appear for at least one or more of the other MBA entrance exams listed above (if not, also for other parallel aptitude tests like PO, CSAT, GATE, etc). Hence, in order to provide completeness to the resources in the book, I decided to include the following topics too (even though they have been rarely asked in the CAT):

Sequences and series; Blood relations; Direction Test; Statement and Conclusions; Statement and Assumptions; Assertion and Reason; Statement—Courses of Action; Mathematical Operations.

Part 3: Reasoning Archives

Part 3 of this book which is “Reasoning Archives” takes the readers through an entire gamut of experience that the reasoning questions/section has taken aspirants through in the CAT and three other major MBA entrance exams (XAT, IIFT and SNAP). While CAT questions on reasoning are covered from 1999 to 2008, XAT, IIFT and SNAP exams are covered over the last 5 to 6 years. This coverage gives you a feel of the level of difficulty of the reasoning questions asked in each of these exams.

Going through the questions in the archives and the solutions to those questions would help you put a final seal in your quest for mastering the all important reasoning area of your test preparation.

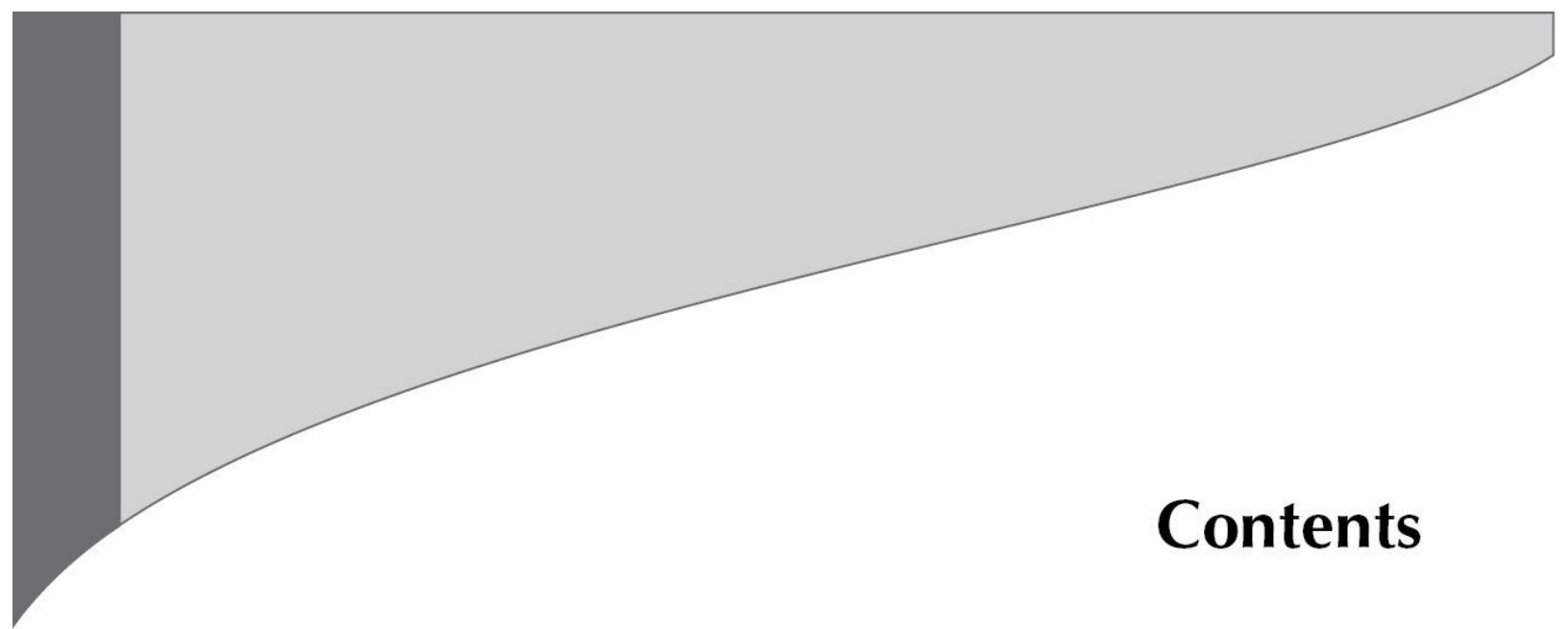
Q A FINAL WORD

One final thing I would like to tell you about this book before you embark on your journey for the preparation of reasoning. The solutions contained in this book for the most part give you a step-by-step solution to every question thereby helping you understand exactly what you need to do and how you need to organise your thinking while you are dealing with a reasoning question. I call this step-by-step approach to explaining how to solve a reasoning question as the “REACTION TRACKER”. In the easy direct questions, the ‘REACTION TRACKER’ might just help you get clarity in terms of how you thought and what were the things that you did correct in order to get to the answer of the question. In the slightly more difficult questions, this approach to explaining how a question gets

solved would actually help you upgrade your skills in reasoning.

I would encourage you to use the unique ‘REACTION TRACKER’ approach in this book to solve reasoning problems. All the best for a fruitful learning experience!!

ARUN SHARMA



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Model Test Paper (Based on the Latest Online Pattern)

Part 1

Reasoning for the CAT

Section 1

Logical Reasoning

-
- Introduction to Logical Reasoning
 - Logical Reasoning Based on Arrangements
 - Logical Reasoning Based on Rankings
 - Team Formations
 - Quantitative Reasoning
 - Puzzle Test
-

1

Important Concepts in Logical Reasoning

OUTLINE

Learning Objectives

- Get acquainted with few thumbrules required to solve logical reasoning questions
- Learn to think in a structured fashion
- Learn to handle complexities involved in problem solving
- Learn to organise information in a pictorial form to clearly conceive the problem

Chapter Highlights

- Logic and Language
- Solved Examples

Ever since the start of time, man has always been surrounded by logic (time and logic seems to have coexisted) — it exists all around us, and is all encompassing. There is implicit logic in all human and natural activity—right from the primary level of logic seen in our day-to-day lives to its very advanced form which operates the machines & tools we use for our day-to-day work. Every subject we study, every product we build, every activity we undertake is guided by its own inherent logic.

For instance, when faced with the situation of starting a car, switching on an electric appliance like an electric bulb, etc. we use logic inherently. In fact, it would be difficult to imagine life today without even a thought on most of the logical structures that we use inherently.

🔍 LOGIC AND LANGUAGE

The ancient Greeks were the first to study logic as a subject in depth. The lack of any systematic notation for the process of logic during its initial development led the Greeks to rely extensively on the use of language to explain logic. Each one of us even today instinctively uses language to explain what we are doing. Thus we use logical language in each of the following cases—

1. Where is my key?

Ans: It's on the blue table.

Or

It's in the second shelf from the bottom inside your cupboard.

2. Could you direct me to Mr Mehta's house?

Ans: Proceed straight from here and take the right turn from the second crossing. Move about 100 metres after the right turn and you will reach a 'Y' junction. Take the left leg of the Y and this road leads to a dead end. Mr Mehta lives on the second floor of the second last house on the left of this road.

3. If I put water in a working refrigerator it will become cold.

4. To turn on the car, one needs to switch on the ignition.

Thus, each of us comes across millions of such everyday situations where we use logic inherently as part of our day-to-day language.

The study of logic by the Greeks was largely confined to the study and documentation of logical language. However, the problems of understanding logic through language are very high, since this approach becomes extremely complex and unwieldy the moment the logical string becomes longer. This complexity was the reason that when Aristotle summed up Greek logic in his Treatise on Logic in the 4th century BC, many of the greatest minds were at a loss to understand it.

Symbolic logic

It was only in the late 19th century when Gottlob Frege brought about a revolution in the whole field of reasoning by inventing 'symbolic logic'— the use of symbols to represent ideas; that the next phase of development in logical thought started. With this improvement of notation, logical and mathematical ideas could be precisely written down for perhaps the first time. The inconsistencies and vagueness of language were overcome through the use of symbols to denote logical thoughts. The development of symbolic logic further led to the development of 'logical thinking'.

Consider the statement “ If a car has poor air conditioning or low fuel efficiency then it is not a nice car, then the fact that a car is nice means that it will have neither poor air conditioning nor low fuel efficiency.

This long language string used to express the above logic can be condensed using the following symbols:

P (poor A/C) & L (low fuel efficiency) & N(C) (Nice car).

Thus, if P or L then not N (C) then N (C) means not P or L.

The words OR, NOT & AND all can have their own logical symbols.

Thus OR is 'V', NOT is ~ AND is +.

Thus , the above sentence can be condensed in its logical form as:

$$(P \vee L) \wedge (\sim N(C)) \wedge N(C) \wedge (\sim P) \wedge (\sim L).$$

In fact, to reduce ambiguity, tediousness and complexity of language based interpretation, solving logical problems involves as its first step the interpretation of the language of the question and conversion of the language of the question into symbolic form. Moreover, this also aids in cutting

down the time required to solve complex reasoning questions.

Thus, when the language of logic is converted to symbolic form, then the truth of such a sentence depends only on its logical form and not on its content.

Any similar sentence, (using totally different language) which uses the same logical form will be true under the same circumstances. The process of mastering reasoning then has to take as its first step the understanding of the process of conversion of language into symbolic logic. In fact, the process of solving logical problems is greatly eased through the use of symbols to document the language.

Some Standard Symbols that You can Use for Logical Language

NOT	$\sim$
OR	$\vee$
AND	$+$
If and Only if	$\int$
Not, if	π
If, Then	$\dots$

Besides, you would do well to keep in mind the following factors while creating a symbolic framework for your question:

- Æ Proper Nouns should always be denoted by capitals.
- Æ In Questions where the sex of the proper noun is crucial to the solving of the question, you can denote the female by underlining the capital letter used.
- Æ As you start solving Reasoning Questions, create your own set of symbols for standard relational sentence structures. (*See the highlighted box*):

(1) Is next to

Thus, A is next to B can be: $AB \vee BA$

(2) (a) Is to the immediate left of

Thus, A is to the immediate left of B can be: AB

(b) Is to the left of

Thus, A is to the left of B can be: A_B

(3) (a) Are at the ends

Thus A and B are at the ends means:

$(A\_B) \vee (B\_A)$

(b) Is at the extreme left

Thus A is at the extreme left means:

$(A\_)$

(4) Is more than/taller than/greater than

Thus A is greater than/ taller than/ more than B & C can be symbolically represented by:

$A > (B + C)$ [Note here that we do not know the relationship between B & C]

(5) Is less than/shorter than/lower than

Thus A is less than/shorter than/lower than B & C can be symbolically represented by:
 $A < (B + C)$ [Again, note here that we do not know the relationship between B & C]

(6) Is between

Thus, A is between B & C means that A can be anywhere between B & C.

$(B \text{ ___ } A \text{ ___ } C) \vee (C \text{ ___ } A \text{ ___ } B)$

(7) Is the son of

Thus, A is the son of B
 $\text{A} \text{ --- } \text{B}$

(8) Is the daughter of

Thus, A is the daughter of B
 $\text{A} \text{ --- } \text{B}$

(9) Is the Parent of

Thus, A is the parent of B
 $\text{A} \text{ --- } \text{B}$ $\vee$ $\text{A} \text{ --- } \text{B}$

(10) Is the spouse of

Thus, A is the spouse of B
 $\text{A} \text{ --- } \text{B} \vee \text{A} \text{ --- } \text{B}$

(11) Is the wife of

Thus, A is the wife of B
 $\text{A} \text{ --- } \text{B}$

(12) Is the sibling of

Thus, A is the sibling of B
 $(\text{A} \text{ .. } \text{B}) \vee (\text{A} \text{ .. } \text{B}) \vee (\text{A} \text{ .. } \text{B}) \vee (\text{A} \text{ .. } \text{B})$

Some Important Logical Manoeuvres:

(1) If, Then

The condition If A, then B leads to the following valid conclusions

Valid Reasoning 1: A therefore B.

Valid Reasoning 2: Not B, therefore not A.

At the same time If A then B also throws up the following invalid conclusions.

Invalid Reasoning 1: B, therefore A.

Invalid Reasoning 2: Not A, therefore not B.

The above structures of logical thought can be illustrated through the following examples:

If A teaches, B will go to the movies.

Valid Reasoning 1: A teaches, therefore B will go to the movies.

Valid Reasoning 2: B has not gone to the movies, therefore A did not teach.

Invalid Reasoning 1: B went to the movies, therefore A must have taught. This is an invalid line of reasoning.

Invalid Reasoning 2: A did not teach, therefore B did not go to the movies. This too is invalid.

(2) If and Only If

The condition If and Only If A, then B leads to the following valid conclusions.

Valid Reasoning 1: A, therefore B.

Valid Reasoning 2: Not B, therefore not A.

Valid Reasoning 3: B therefore A.

Valid Reasoning 4: Not B therefore not A.

The above structures of logical thought can be illustrated through the following examples:

If and only if A teaches, B will go to the movies.

Valid Reasoning 1: A teaches, therefore B will go to the movies.

Valid Reasoning 2: B has not gone to the movies, therefore A did not teach.

Valid Reasoning 3: B went to the movies, therefore A must have taught.

Valid Reasoning 4: A did not teach, therefore B did not go to the movies.

(3) Either Or

Either A or B

Valid Reasoning 1: Not A then B

Valid Reasoning 2: Not B then A

Invalid Reasoning 1: A then Not B

Invalid Reasoning 2: B then Not A

The above structures of logical thought can be illustrated through the following examples:

Either A teaches or B goes to the movies.

Valid Reasoning 1: A does not teach, therefore B will go to the movies.

Valid Reasoning 2: B has not gone to the movies, therefore A must have taught.

Invalid Reasoning 1: A taught, then B did not go to the movies.

Invalid Reasoning 2: B went to the movies, then A did not teach.

(4) If, Then Not

If A then Not B:

Valid Reasoning 1: A then not B

Invalid Reasoning 1: Not B then A

Invalid Reasoning 2: B then Not A

The above structures of logical thought can be illustrated through the following examples:

If A teaches, then B will not go to the movies.

Valid Reasoning 1: A teaches, therefore B will not go to the movies.

Invalid Reasoning 1: B has not gone to the movies, therefore A taught.

Invalid Reasoning 2: B went to the movies, therefore A did not teach.

As a student it is important for you to follow a few standard steps while solving logical questions:

1. Take a complete 'preview of the situation' clearly understanding the context. Remember to accept the situation as it is given.

2. Read each and every part of the question carefully. You should concentrate hard and focus fully while reading the question. This is a very important prerequisite for solving questions on logic since very often in long sentences there will be individual single words which will transform the meaning of the sentences. If you fail to take into account these words, the end result will be errors in logic & deduction.

Let us now proceed to understand how all this applies to real life problem solving through examining questions which have been asked in different competitive exams and CAT.

Example 1 A party is held at the house of the Mehtas. There were five other couples present (besides Mr and Mrs Mehta), and many, but not all, pairs of people shook hands. Nobody shook hands with anyone twice, and nobody shook hands with his/her spouse. Both the host and hostess shook some hands.

At the end of the party, Mr Mehta polls each person present to see how many hands each person (other than himself) shook. Each person gives a different answer. Determine how many hands Mrs Mehta must have shaken.

(Can we prove that it was not Mrs Mehta who shook 10 hands?)

Solution Let there be 5 couples:

A — A
B — B
C — C
D — D
E — E
& M — M

Deduction 1 From the condition that nobody shook hands with his/her spouse, it is clear that none of the twelve people in the party shook more than 10 hands.

(Since, nobody shakes hands with himself or his/her spouse, it leaves a maximum of 10 people to shake hands with).

Deduction 2 Mr Mehta has asked the question to eleven different people and each of them has given a different answer. Also, the highest answer anyone could have possibly given is 10. Hence, the only way to distribute different numbers of hand shakes amongst the 11 people is:

0,1,2,3,4,5,6,7,8,9,10. [*Note*: somebody shook 0 hands and somebody shook 10].

Deduction 3 Since, the host & hostess have both shaken some hands, the person who shook '0' hands cannot be either M or M. It has to be one of the other 10 people in the party.

[At this point you need to realise that in the context of this problem A, A, B, B, C, C, D, D, E & E are alike, i e. there is no logical difference amongst these 10 and you have exactly the same information about each of these 10 people. However, Mrs Mehta is different because she stands out as the hostess as well as the wife of the person who has asked the question].

Since all ten guests are the same, assume 'A' shook no hands. This leads us to the following deduction.

Deduction 4 Take any one person apart from A & A; say B. B will not shake hands with himself & his wife. Besides B will also not shake hands with A (who has shaken no hands). Thus, B can shake a

maximum of 9 hands and will thus not be the person to shake 10 hands.

What applies to B, applies to B, C, C, D, D, E, E and M.

Hence, A is the only person who could have shaken 10 hands. Hence, amongst the couple A & A, if we suppose that A had shaken 0 hands, then A must have shaken 10 hands.

Note: The main result here is that, out of the people to whom M has asked the question, and amongst whom we have to distribute the numbers 0 to 10 there has to be a couple who has had 0 & 10 handshakes. It could be any of the five couples, but it cannot be M who has either 0 or 10 handshakes.

We now proceed, using the same line of reason as follows.

Deduction 5 Suppose B has 1 handshake — he must have shaken hands with A (who has shaken everybody’s hands she can).

Then, B wouldn’t have shaken hands with anyone out of A, B, C, C, D, D, E, E & M. At this point the following picture emerges:

A	—		<u>A</u>	—	10
B	—	1	<u>B</u>	—	
C	—		<u>C</u>	—	
D	—		<u>D</u>	—	
E			<u>E</u>		
<u>M</u>					

Numbers left to be allocated — 2, 3, 4, 5, 6, 7, 8, 9.

Considering C, as a general case, he cannot shake hands with C, A (Who shook no hands) & B (Who shook hands only with A). This is mandatory since A has shaken hands with 10 people).

Thus, C can shake hands with a maximum of 8 people and this deduction will be true for C, D, D, E, E & M too. Hence, the only person who could get 9 handshakes is B.

Thus, we conclude that just like 0 and 10 handshakes were in one pair, similarly 1 and 9 handshakes too have to be part of one pair of husband and wife.

Similar deductions, will lead to the realisation that 2 & 8, 3 & 7 and 4 & 6 handshakes will also occur for couples amongst the 11 people questioned.

Hence, M must have shaken 5 hands.

The above question was solved on the basis of a series of deductions, which were based on a series of Logical Form (LF), then logical structures.

Let us consider another example:

Example 2 Consider the following grid:

L		P
M	O	Q
N		R

Each letter in the above grid represents a different digit from 0 to 9, such that

$L \nmid M \nmid N = M \nmid O \nmid Q = P \nmid Q \nmid R$. Find the value of ‘O’.

Solution In order to solve such a question, one needs to proceed systematically making one deduction

at a time.

Deduction 1 There are seven alphabets and ten digits. We need to somehow eliminate 3 of these 10 to define the 7 digits required to be allocated.

It is obvious, that '0' cannot be used since if we make any alphabet '0' we will end up with a product that '0' in one or a maximum of two of the three cases.

Deduction 2 You need to find a product which can be made in three different ways.

Deduction 3 Two of these three ways have to be independent of each other with no matching digits and the third way has to be drawn out of one digit each from the first two ways and one independent digit that has not been used.

Also, at this point there are 9 digits and 2 more to be eliminated.

Now we move to the process of Trial & Error.

Notes on Interpretation

Trial & Error is one of the most useful processes for solving questions based on reasoning. Principally there are three ways for carrying out trial & error search.

- (1) Complete trial & error.
- (2) Directed trial & error.
- (3) Blind trial & error.

The blind trial and error is what most students practice and hence are unable to solve logical questions. Since they do not use their deductive logic to do a more focused search, they end up going round in circles while trying to solve such questions.

Instead directed trial & error and comprehensive trial & error are superior problem solving processes and therefore score above the complete trial and error method.

Application of Directed Trial & Error The question above is a classical situation warranting a directed trial & error. Hence, this is best illustrated through the example.

At this stage we are at a situation where we know: 1, 2, 3, 4, 5, 6, 7, 8 and 9 have to be allocated to L, M, N, O, P, Q and R.

At this point, take a call as to whether you want to use 9 or not? Nine and 1 are different from the other numbers primarily because they are the highest and lowest numbers respectively and also because 9 gives us "maximum room for manoeuvring" the question as compared to the other numbers, while 1 is a useful tool for a third multiplier if we do not want to change the value of the multiplication.

Note: The student should analogise the thinking process applied here to the thinking process used to unravel a ball of wool which has got entangled.

To disentangle an entangled ball of wool, we need to search the end of the ball. Once you identify either end, the remaining process of disentangling the ball requires very elementary logic coupled with patience and perseverance. The logic for picking up the end point of the ball of wool is that it is different from all other points in the ball.

Similarly, in reasoning questions, we need to identify things/objects/people which are different from other things/objects/ people and start our solution from there.

After that, the whole process becomes one of use of elementary logic for elementary deductions coupled with patience and perseverance.

In the question under consideration, if we take a call on using ‘9’ and decide to do so, we can then deduce that the required product has to be a multiple of 9.

[Remember that at this point of time we have ignored the line of thinking that neglects 9. We will have to consider it, if we do not get an answer by using 9].

Since the product has to be a multiple of 9, assume that the product is 36. But, this product eliminates the use of 8,7 & 5 and leaves only 6 digits. Going below 36 as a product for further trial and error will further reduce the number of possibilities. Hence, let us try to go to the higher extreme & try to experiment with the number 72.

We see that $72 = 3^2 \times 2^3$ and can be formed by $9 \times 8 \times 1$ or $6 \times 3 \times 4$ or $9 \times 4 \times 2$.

This satisfies our deduction that 72 gives three ways of solving the question. Also, the second requirement that there should be two ways which are independent of each other and a third way which uses one term each from the two independent ways and one unique term is also satisfied.

Since $6 \times 3 \times 4$ is independent of $9 \times 8 \times 1$ in all its digits. Also, $9 \times 4 \times 2$ uses the no. 9 from $9 \times 8 \times 1$ & 4 from $6 \times 3 \times 4$.

Hence, the following possibility emerges:

L = 6	P = 8	
M = 4	O = 2	Q = 9
N = 3	R = 1	

You need to understand here that, the digit ‘2’ is the only one which is fixed to its place in the grid. All the other digits can be changed. Thus, we can have alternative arrangements like:

L = 3		P = 1
M = 4	O = 2	Q = 9
N = 6		R = 8
OR		
L = 6		P = 6
M = 9	O = 2	Q = 4
N = 1		R = 3

The only thing that is fixed is the number 2 for O.

Example 3 Let us now consider another question, which is a classic case of complete or comprehensive trial & error method.

Two people A & B are playing a game. Both A & B are logical people. There are two boxes on the table. One of them contains 9 balls, the other contains 4 balls. In this game, the players are supposed to take alternate turns of picking up balls according to the following rules:

- (a) Pick up as many balls as you want to from any box.

(b) Pick up an equal number of balls from both boxes.(if you pick from both boxes).

The person who picks up the last ball wins the game. In his/her turn it is mandatory to pick up at least one ball. A has to play first. What should he do to ensure a win?

Solution

Deduction 1 The rules of the game define that there are two legal moves:

Picking up an equal number from each box or picking up any number from either box (at least 1).

Deduction 2 A has 17 possible moves to make and since the question asks for one particular move that will ensure a win, one of these 17 must be the winning move. It is at this stage that you should realise that the question calls for a comprehensive trial & error which should result in the elimination of 16 possibilities.

The starting position is 9, 4.

A's options at the start of the game can be basically divided into three options:

I Pick up balls from the first box.	II Pick up balls from the second box.	III Pick up balls from both the boxes.

The position after A plays his move can be documented as follows (in terms of the number of balls B has in front of him.):

[There are 9 moves in option I.] (Balls from first box are picked by A.) If

- (a) A picks up 1 ball, B will be left with 8, 4.
- (b) A picks up 2 balls, B will be left with 7, 4
- (c) A picks up 3 balls, B will be left with 6, 4
- (d) A picks up 4 balls, B will be left with 5, 4
- (e) A picks up 5 balls, B will be left with 4, 4
- (f) A picks up 6 balls, B will be left with 3, 4
- (g) A picks up 7 balls, B will be left with 2, 4
- (h) A picks up 8 balls, B will be left with 1, 4
- (i) A picks up 9 balls, B will be left with 0, 4

Similarly, if he picks up balls from the second box(option II) he will have an end result of: If

- (a) A picks up 1 ball, B will be left with 9, 3
- (b) A picks up 2 balls, B will be left with 9, 2
- (c) A picks up 3 balls, B will be left with 9, 1
- (d) A picks up 4 balls, B will be left with 9, 0

And for option III, If:

- (a) A picks up one ball each from both boxes, B is left with 8, 3
- (b) A picks up two balls each from both boxes, B is left with 7, 2
- (c) A picks up three balls each from both boxes, B is left with 6, 1
- (d) A picks up four balls each from both boxes, B is left with 5, 0

Out of these 17 options, the options of leaving (0,4), (9,0) and (5,0) are infeasible since it will result in an immediate win for B, who can clean up the board in one move. Similarly leaving (4, 4) will

also cause an immediate win for B. *This leaves A with 13 options which he needs to consider. These are:*

I	II	III
8, 4	9, 3	8, 3
7, 4	9, 2	7, 2
6, 4	9, 1	6, 1
5, 4		
3, 4		
2, 4		
1, 4		

From these 13, the easiest option to check is 1,4. *If B gets 1,4 he has the following options:*

I	II	III
0, 4	1, 3	0, 3
	1, 2	
	1, 1	
	1, 0	

Obviously, he cannot play (0, 4), (1, 0) , (1, 1) or (0, 3). This means he can leave A with ((1, 2) or (1, 3). These need to be further investigated.

If B leaves (1, 2):

A has the following options to leave for B

I	II	III
0, 2	1, 1	0, 1
	1, 0	

Obviously, if he plays any of this, A will lose. Hence, if B leaves A with (1, 2) A will definitely lose.

Deduction 3 A cannot leave B with a situation in which B can make into (1, 2) or (2, 1).

Evaluating the 13 options left for A, we get that (1, 4), (2, 4), (3, 4), (5, 4), (9, 1) , (9, 2), (6, 1) & (6, 2) are situations from which B can reach (2, 1) or (1, 2) in one move. This means B will win if A leaves him with any of these eight situations.

Thus, A will eliminate these eight options from his list of 13 and come down to five options which need further checking. These are: (6, 4), (7, 4), (8, 4), (9, 3) and (8, 3). At this stage we further need to eliminate four of these five options to come to the correct answer.

Now let us start our investigation with (6, 4). *If B is left with (6, 4) he has the following options:*

I	II	III
5, 4	6, 3	5, 3
4, 4	6, 2	4, 2
3, 4	6, 1	3, 1

2, 4

6, 0

2, 0

1, 4

0, 4

Of this, B cannot play (0,4), (1, 4), (2, 4), (3, 4), (4, 4), (5, 4), (6, 0), (6, 1), (6, 2), (2, 0), (3, 1) & (4, 2) [Since these lead to a (2, 1) or a clean win in one move.] Thus, B can either leave (6, 3) or (5, 3).

If B leaves (5, 3) for A, A's options are:

I	II	III
4, 3	5, 2	4, 2
3, 3	5, 1	3, 1
2, 3	5, 0	2, 0
1, 3		
0, 3		

In each of these cases, B will either win in one move or get to (2, 1) in one move. Thus, A cannot do anything if B leaves (5, 3) in return for A leaving (6, 4).

Deduction 4 Just like being left with (2, 1) means a definite loss, so does being left with (5, 3).

Hence, A cannot allow a situation in which B can make it (5, 3) in one move.

Thus, A cannot leave B with (6, 4), (9, 3) or (8,3) since, each of these will result in B giving back (5, 3) in one move.

Thus A's option are down to (7, 4) or (8, 4). These need to be further investigated now:

Let us consider A leaving (7, 4) for B.

B's options:

I	II	III
(6, 4)		
(5, 4)	(7, 3)	(6, 3)
(4, 4)	(7, 2)	(5, 2)
(4, 4)	(7, 1)	(4, 1)
(3, 4)	(7, 0)	(3, 0)
(2, 4)		
(1, 4)		
Or (0, 4)		

After closely evaluating each of these, all possible options will get eliminated because in one move they lead to either a straight win or a (2, 1) situation or a (5, 3) situation.

If A does any of this, then B cannot do anything to stop from losing the game.

The above question obviously is extremely long and complicated. However, what needs to be noticed is that even for this extremely long question, at no point of time is there any big logical jump i.e. from one logic emerges the next one and so on.

Normally CAT questions only use 10% of this logic. However, let us now consider a question (Example 1.4) which appeared in CAT 2004 and was found to be extremely tough to crack. In fact, the question has been put down as unsolvable by most famous national level coaching centres on their website.

Example 4 The year was 2006. All six teams in Pool A of World Cup Hockey play each other exactly once. Each win earns a team three points, a draw earns one point and a loss earns zero points. The two teams with the highest points qualify for the semifinals. In case of a tie, the team with the highest goal difference (goals for–goals against) qualifies. In the opening match, Spain lost to Germany. After the second round (after each team played two matches), the (pool A) table looked as shown on the next page.

In the third round, Spain played Pakistan, Argentina played Germany, and New Zealand played South Africa. All the third round matches were drawn. The following are some results from the fourth and fifth round matches.

- (a) Spain won both the fourth and fifth round matches.
- (b) Both Argentina and Germany won their fifth round matches by 3 goals to 0.
- (c) Pakistan won both the fourth and fifth round matches by 1 goal to 0.

Solution For solving the above question, one requires tremendous alacrity, logical consistency and above all a cool head.

Also, the solution of the above question is dependent on your ability to interpret the table and find out the appropriate linkages (something that might not be as easily done as said).

Let us look at the table and create our interpretations:

Deduction 1 Germany and Argentina have both won their matches while New Zealand and South Africa have lost both theirs.

Let us start by making tables for the possible result of the first two rounds for each of the six teams.

Germany

Round one Opponent	Result
1. Spain	Won 1–0/2–1
2. Pak/New Zealand/South Africa	Won 2–1/1–0
3. Argentina	

It is given that Germany has played Spain in the opening match (and obviously won that game).

Looking at the goals for & goals against columns and the fact that Germany has won both the first and second round matches, we deduce that its two wins must have been in one of the following combinations:

(Pool A)

Team	Games Played	Won	Drawn	Lost	Goals For	Goals Against	Points
Germany	2	2	0	0	3	1	6

Argentina	2	2	0	0	2	0	6
Spain	2	1	0	1	5	2	3
Pakistan	2	1	0	1	2	1	3
New Zealand	2	0	0	2	1	6	0
South Africa	2	0	0	2	1	4	0

Won 1 – 0 & Won 2 – 1
 Or
 Won 1 – 0 & Won 2 – 1

Notes on Interpretation

Germany cannot win either match by 2–0 or 3–0 or 3–1 margins since it will not be able to win the other match and maintain a 3–1 goals for goals against situation.

Deduction If Germany had won the first game 2–1 against Spain, Spain would have won its second round match by 4–0, while if Germany won by 1–0, then Spain would have won its second round match 5–1 (since Spain has Goals For = 5 and Goals Against = 2).

Further, since only two teams — New Zealand and South Africa have conceded 4 or more goals, Spain must have played one of them. Looking into South Africa’s G.F/G.A columns, if South Africa had conceded 4 goals in the second round, then it should have won the first round (1,0). But, South Africa has lost both rounds.

Hence, Spain played its second round against New Zealand. Further, if this is true, no other team can play New Zealand in round two.

At this stage, the following possibilities emerge.

Team Germany				
Round 1	vs.	Spain	Won	1–0 or 2–1
Round 2	vs.	Pak/S.A.	Won	2–1 or 1–0
Round 3	vs.	Argentina	Draw	
Team Spain				
Round 1	vs.	Germany	Lost	0–1 or 2–1
Round 2	vs.	New Zealand	Won	5–1 or 4–0
Round 3	vs.	Pakistan	Draw	
Team New Zealand				
Round 1	vs.	Arg/Pakistan	Lost	0–1 or 1–2
Round 2	vs.	Spain	Lost	1–5 or 0–4
Round 3	vs.	South Africa	Draw	

Deduction Team Pakistan won one round and lost one and GF/GA 2/1. Hence, won 2–0 and lost 0–1. Now, since New Zealand played its first round against Pakistan or Argentina it could not have lost 1–2. This is because in the case of Pakistan, if Pakistan had won 2–1 against NZ in round 1, its round 2

would have been a draw.

Further, Argentina has conceded no goals. Hence, it could not have won 2–1 against N.Z.

This means that N.Z. must have lost 0–1 in its first match to Argentina (that cannot happen against Pakistan, because Pakistan cannot win 1–0 in the first round since it will result in a 1–1 draw in round 2).

Consequently N.Z. lost 1–5 in its second match to Spain and hence Spain must have lost 0–1 to Germany.

The following scenario emerges from these deductions:

Team Germany				
Round 1	vs.	Spain	Won	1–0
Round 2	vs.	S.A.	Won	2–1
Note: Here Germany’s round 2 has to be vs. S.A., since Pakistan cannot lose 2–1				
Team Spain				
Round 1	vs.	Germany	Lost	0–1
Round 2	vs.	N.Z.	Won	5–1
Team N.Z.				
Round 1	vs.	Argentina	Lost	0–1
Round 2	vs.	Spain	Lost	1–5
Team Pakistan				
Round 1	vs.	S.A.	Won	2–0
Round 2	vs.	Argentina	Lost	0–1
The first three rounds are as under:				
Round 1 matches:				
Germany	beat	Spain	1–0	
Argentina	beat	N.Z.	1–0	
Pakistan	beat	S.A.	2–0	
Round 2 matches:				
Spain	beat	N.Z.	5–1	
Argentina	beat	Pak	1–0	
Germany	beat	S.A.	2–1	

Putting all deductions into one table, the following picture emerges:

	Germany	Argentina	Spain	Pak	New Zealand	S. Africa
Germany	—	D#3	W(1–0)#1			W(2–1)#
Argentina	D#3	—		W(1–0)#2	W(1–0)#1	
Spain	L(0–1)#1		—	D#3	W(9–1)#2	
Pakistan		L(0–1)#2	D#3	—		W(2–0)#1

New Zealand		L(0-1)#1	L(1-5)#2	—	D#3	
S. Africa		L(1-2)#2		L(0-2)#1	D#3	—

According to the information available about the fourth and fifth round of matches:

Germany	—	Pakistan, Loss (0-1) & N.Z. won (3-0)
Argentina	—	Spain, Loss by 'x' goals & S.A. won (3,0)
Spain	—	Argentina won by 'x' goals & S.A. won by 'y' goal
Pakistan	—	Germany won (1-0) & N.Z. won 1-0
N.Z.	—	Germany loss (0-3) & Pakistan lost (0-1)
S.A.	—	Argentina lost (0-3) & Spain lost by 'y' goals

And the goal differences for the six teams are:

Germany	+1+1+0-1+3=+4
Argentina	+1+1+0-x+3=5-x=Max. 4 or less
Spain	-1+4+0+x+y=3+x+y=Min. 5 or more
Pakistan	2-1+0+1+1=+3
N.Z.	-1-4+0-3-y=-6-y

Based on these deductions, the following questions can be answered.

- Which one of the following statements is true about the matches played in the first two rounds?
 - Pakistan beat South Africa by 2 goals to 1.
 - Argentina beat Pakistan by 1 goal to 0.
 - Germany beat Pakistan by 2 goals to 1.
 - Germany best Spain by 2 goals to 1.
- Which one of the following statements is true about the matches played in the first two rounds?
 - Germany beat New Zealand by 1 goal to 0.
 - Spain beat New Zealand by 4 goals to 0.
 - Spain beat South Africa by 2 goals to 0.
 - Germany beat South Africa by 2 goals to 1.
- Which team finished at the top of the pool after five rounds of matches?
 - Argentina
 - Germany
 - Spain
 - Cannot be determined

Spain must be top of the pool since it has the best goal difference even in it's worst case scenario.

4. If Pakistan qualified as one of the two teams from Pool A, which was the other team that qualified?
- (a) Argentina (b) Germany
- (c) Spain (d) Cannot be determined

Notes on Interpretation

This question has an ambiguity since according to the deductions, Spain and Germany both should be above Pakistan in terms of goal difference and hence Pakistan cannot qualify. However, if Pakistan qualifies, so do both Spain and Germany.

The above question was basically testing the ability of the student to analyse data. In the very same paper (CAT 2004), another question on data analysis went as follows:

Example 5 Prof. Singh has been tracking the number of visitors to his homepage. His service provider has provided him with the following data on the country of origin of the visitors and the university they belong to:

Number of Visitors/Day

University	1	2	3
University 1	1	0	0
University 2	2	0	0
University 3	0	1	0
University 4	0	0	2
University 5	1	0	0
University 6	1	0	1
University 7	2	0	0
University 8	0	2	0

Number of Visitors/Day

Country	1	2	3
Canada	2	0	0
Netherlands	1	1	0
India	1	2	0
UK	2	0	2
USA	1	0	1

Deduction 1 Looking at Day 3, University 4 must belong to the UK and University 6 must belong to the USA.

Deduction 2 From Day 2 it is clear that University 8 has to be an Indian University while University 3 has to be from Netherlands.

Deduction 3 From the analysis of Day 1 data , University 2 and University 7 should be distributed

amongst UK and Canada in either order, i.e. 2 belongs to UK and 7 to Canada or 2 belongs to Canada and 7 to UK. [Symbolically, (2UK + 7 Canada) vs (2 Canada + 7 UK)]

Deduction 4 The visitor from USA on Day 1 must come from University 6. Hence, University 1 and University 5 should be distributed between India and Netherlands.

With this set of deductions, we get the following table. Using this table the answers to the following questions become quite elementary.

Number of Visitors/Day	
University	I
University 1	I v N
University 2	UK v C
University 3	N
University 4	UK
University 5	N v I
University 6	USK
University 7	C v UK
University 8	I

- To which country does University 5 belong?
 - India or Netherlands but not USA
 - India or USA but not Netherlands
 - Netherlands or USA but not India
 - India or USA but not UK
- University 1 can belong to:

(a) UK	(b) Canada
(c) Netherlands	(d) USA
- Which among the listed countries can possibly host three of the eight listed universities?

(a) None	(b) Only UK
(c) Only India	(d) Both India and UK
- Visitors from how many universities from UK visited Prof. Singh’s homepage in three days?

(a) 1	(b) 2
(c) 3	(d) 4

Logical Reasoning based on Arrangements

Arrangement questions are one of the most common question types in logical reasoning. As the name suggests, questions on arrangements typically involve arranging people or objects in straight lines or around circles/squares or other geometrical shapes.

The key skills involved in solving questions on arrangements include but are not limited to:

- (i) the ability to visualise the geometrical shape of the arrangement situation.
- (ii) the ability to order the clues in the correct order of usage (as explained in the theory of logical reasoning).
- (iii) the ability to perceive what indirect clues are talking about – and how to use them.
- (iv) the ability to convert clues written in language form into visual cues so that you do not need to read the text again and again. Also, converting the language clues to visual cues is critical for the purpose of being able to ‘see’ all the clues at one go.

Illustrated below are the solutions to a few typical questions on arrangements. We would advise you to first have a look at the question and try to solve the same on your own before looking at the step by step process of solving the same – illustrated through the revolutionary “Reaction Tracker” mechanism which is an integral part of this section of the book.

Note: The Reaction tracker is a blow by blow account of exactly what reaction should go on in your mind as you solve an individual question in reasoning.

Look at the following questions and try to solve them:

Example 1 Question at an easy level of difficulty

Directions: Study the information given below to answer these questions.

- (i) Arnold’s fitness schedule consists of cycling, rowing, gymnasium, jogging and boxing from Monday to Saturday, each workout is on one day, one day being a rest day.
- (ii) Gymnasium workout is done neither on the first nor on the last day but is done earlier than rowing.
- (iii) Jogging is done on the immediate next day of the rowing day.

- (iv) Cycling is done on the immediate previous day of the rest day.
- (v) Jogging and boxing were done with a two-day gap between them.
- (vi) Boxing was done on the following day the rest day.

1. Which of the following is a rest day?
 - (a) Wednesday
 - (b) Tuesday
 - (c) Friday
 - (d) Thursday
2. Cycling and jogging days have a gap of how many days between them?
 - (a) Nil
 - (b) Two
 - (c) Three
 - (d) Four
3. On which day is boxing done?
 - (a) Thursday
 - (b) Friday
 - (c) Monday
 - (d) Wednesday
4. Which of the following is a wrong statement?
 - (a) Gymnasium workout is done on the immediate previous day of rowing.
 - (b) Jogging is done three days after the day on which boxing was done.
 - (c) There is a gap of three days between the days on which cycling and rowing are done.
 - (d) There is a two days' gap between the rest day and the day on which gymnasium workout is done.
5. Which of the following is the correct statement?
 - (a) Jogging competition is done after rowing.
 - (b) Cycling is done on Thursday.
 - (c) No workout is done on Wednesday.
 - (d) Rowing is done earlier than cycling.

REACTION TRACKER

The starting figure we start with when we read the first statement is:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Workouts are cycling, rowing, gymnasium, jogging and boxing.

From the second and third clues (gymnasium workout is done neither on the first nor on the last day but was done earlier than rowing and jogging was done on the day immediately following the rowing day), we know that rowing and jogging should be together and also that gymnasium has to be somewhere before this.

Visually this can be represented as:



From the fourth and sixth clues we have:

C-Rest day-B

Note: Putting it in a box signifies that there is no break between the items in the box.

Once we have these two visual representations we can go back to our original figure and think as follows:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Since gymnasium has to precede rowing and jogging, and gymnasium is not on the first day we can have 3 possibilities for placing gymnasium—viz: Tuesday, Wednesday or Thursday.

Possibility 1:

Monday	Gymnasium
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

This case is rejected because, once we place gymnasium we would need to place rowing and boxing in either **Wednesday-Thursday** or **Thursday-Friday** or **Friday- Saturday**. In each of these cases, we would also need to place a 3 day period having **Cycling-Rest day-Boxing**. It can be easily seen that in any of these 3 situations under Possibility 1, we do not have a completely free 3 day period anywhere in the week. Thus, we can reject Possibility 1.

Possibility 2:

Monday	Gymnasium
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

Rejected on the same logic as Possibility 1. There is no availability of a 3 day window to place **Cycling-Rest day-Boxing**.

Possibility 3:

Monday	Gymnasium
Tuesday	
Wednesday	
Thursday	
Friday	

This is the only possibility that would work as in this case, the respective work outs ordering would be

Monday	Cycling
Tuesday	Rest Day
Wednesday	Boxing
Thursday	Gymnasium
Friday	Rowing
Saturday	Jogging

Thus, the answers are:

- 1. (b); Tuesday is the rest day.
- 2. (d); 4 days
- 3. (d); Boxing is done on Wednesday.
- 4. (d); The statement in option (d) is incorrect.
- 5. (a); Only the statement in option (a) is correct.

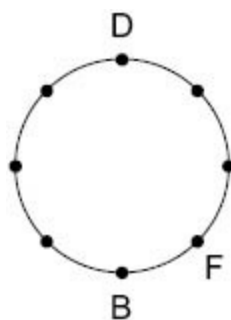
Example 2

Directions: Study the following information to answer these questions.

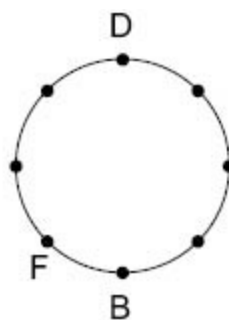
- (i) Alex, Betsy, Chloe, Dennis, Edward, Fiona, Giles and Herbert are gamblers sitting around a round table facing the centre.
 - (ii) Dennis is the neighbour of Alex but not of Herbert.
 - (iii) Betsy is the neighbour of Fiona and 4th to the left of Dennis.
 - (iv) Edward is the neighbour of Herbert and 3rd to the right of Fiona.
 - (v) Chloe is neither the neighbour of Alex nor of Giles.
- 1. Which of the following is wrong?
 - (a) Betsy is to the immediate left of Herbert.
 - (b) Herbert is to the immediate left of Edward.
 - (c) Dennis is 4th to the right of Fiona.
 - (d) All are correct.
 - 2. Which of the following is correct?
 - (a) Dennis is to the immediate left of Giles.
 - (b) Alex is between Chloe and Dennis.
 - (c) Fiona is 3rd to the right of Dennis.
 - (d) Edward is between Herbert and Betsy.
 - 3. Which of the following groups has the 2nd person sitting between the 1st and the 3rd?
 - (a) Alex-Fiona-Chloe

- (b) Giles-Alex-Dennis
 (c) Betsy-Edward-Herbert
 (d) Herbert-Fiona-Betsy
4. Which of the following pairs has the 1st person sitting to the immediate right of the second?
 (a) Betsy-Herbert (b) Fiona-Betsy
 (c) Edwards-Giles (d) Alex-Dennis
5. Which of the following pairs are fourth to one another?
 (a) Chloe-Edwards (b) Fiona-Herbert
 (c) Dennis-Chloe (d) Dennis-Betsy
6. If Chloe and Giles interchange their positions, which of the following will indicate Alex's position?
 (a) To the immediate right of Giles
 (b) 4th to the right of Chloe
 (c) 2nd to the left of Giles
 (d) To the immediate left of Chloe

6-11 : From clues (i) and (iii), we get following two possibilities:

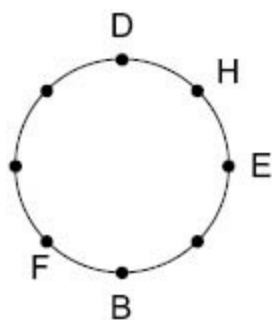


Case I

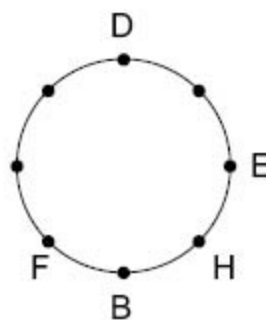


Case II

Now, read clue (iv): Edward is third to the right of Fiona. This information rejects Case I. Using clue (iv), we get the following two possibilities, i.e. Case II (a) and Case II (b).

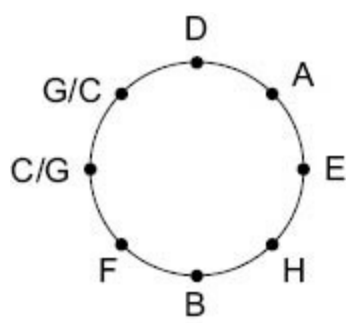


Case II (a)

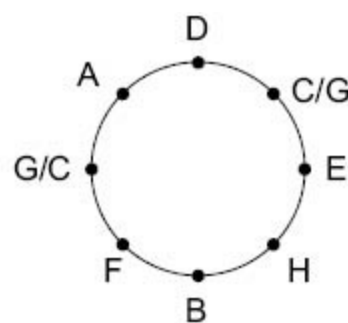


Case II (b)

Now, from clue (ii), we come to know that Dennis is not the neighbour of Herbert. Hence, reject Case II(a). From clue (ii) we get the following two possibilities:



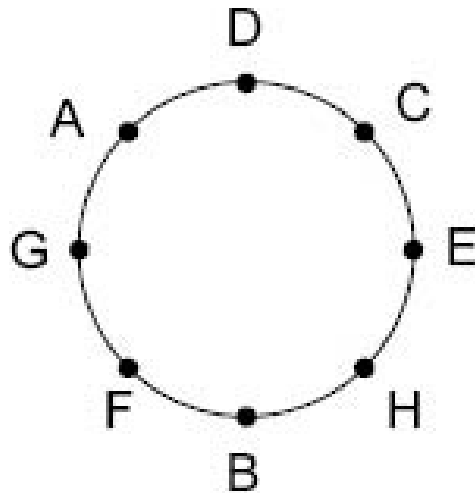
Case II (c)



Case II (d)

Now, from clue (v), Chloe can't be the neighbour of Giles. Therefore, reject Case II (c).

Again, since Chloe can't be the neighbour of Alex, the final seating arrangement will be as follows:



The answers then become pretty straight forward

1. (c)
2. (c)
3. (b)
4. (d)
5. (d)
6. (d)

Example 3

Directions: These questions are based on the information that follows.

In a row of soldiers facing North, (i) Lambert is 8th to the right of Khurusheva; (ii) Mickey is 16th from the left end; (iii) Lambert is 16th to the right of Jackson, who is 27th from the right end of the row; (iv) Khurusheva is nearer than Mickey to the right end of the row; (v) there are 5 boys between Mickey and Khurusheva.

1. How many soldiers are there between Jackson and Mickey?
 - (a) One
 - (b) Two
 - (c) Three
 - (d) Data inadequate
2. How far away is Khurusheva from the right end of the row?
 - (a) 30th
 - (b) 10th
 - (c) 19th
 - (d) 18th
3. How many soldiers are there in the row?
 - (a) 50
 - (b) 40

- (c) 36 (d) Data inadequate

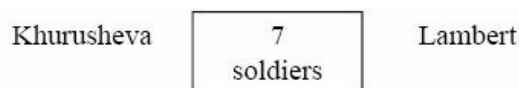
4. How far away is Jackson from the right end of the row?

- (a) Data inadequate (b) 24th
(c) 25th (d) 27th

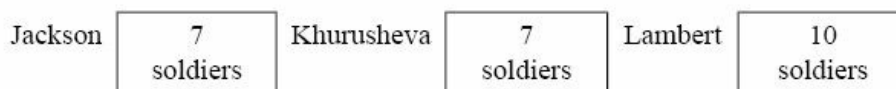
REACTION TRACKER

Let us arrange the whole information.

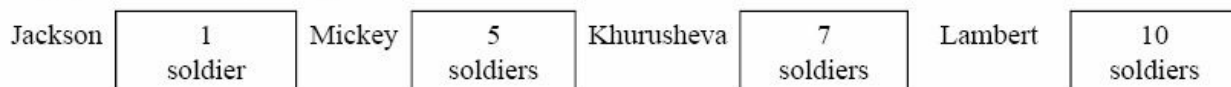
From clue (i), we get



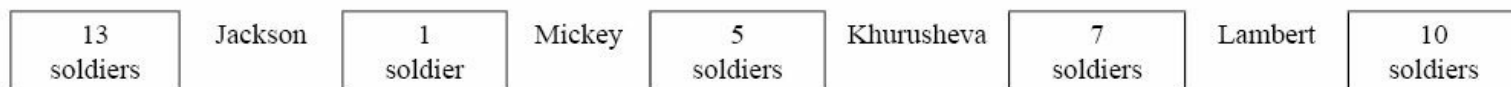
Now, using clue (iii), we get



Now, using clue (iv) and clue (v), we get



Now, from clue (ii), we get the complete information as following:



Hence the answers are:

- (a)
- (c) From the above information it is obvious that occupies 19th position from the right end of the row.
- (b) Total numbers of soldiers = 13 + 3 + 5 + 1 + 7 + 1 + 10 = 40
- (d)

EXERCISE ON ARRANGEMENTS

Directions for Questions 1–5: (Question Category: Matching Puzzle) Study the following information and answer the questions that follow:

- Six picture cards P, Q, R, S, T and U are framed in six different colours – blue, red green grey yellow and brown and are arranged from left to right (not necessarily in the same order).
 - The pictures are of king, princess, queen, palace, joker and prince.
 - The picture of the palace is in the blue colour frame but is not on card S and card P which is of the queen, is in the brown frame and is placed at the extreme right.
 - The picture of the princess is neither on card S nor on card T and is not in either the green or the yellow frame. Card R has a picture of the king in a grey frame and it is fifth from right and next to card Q having the picture of the prince.
- If the princess's card is immediately between the cards of the palace and the prince, then at

what number is the joker's card placed from left?

- (a) Fifth (b) Second
 - (c) First (d) Data inadequate
2. Which is the correct combination of card and frame colours?
- (a) T-Yellow (b) U-Red
 - (c) Q-Green (d) Data inadequate
3. The picture of the joker is in which colour frame?
- (a) Yellow (b) Green
 - (c) Blue (d) Data inadequate
4. The picture of the palace is printed on which card?
- (a) S (b) T
 - (c) U (d) None of these
5. If the photo frame of the prince and joker is interchanged, then the colour of frame of the prince is:
- (a) Green (b) Yellow
 - (c) Blue (d) Data inadequate

Directions for Questions 6 to 8: Study the following information and answer the questions that follow:

A company is planning to organise 8 lectures—A, B, C, D, E, F, G and H for 3 subjects—Quants, D.I. and English.

The lectures are spread over three days.

Quants is to be covered first in 3 lectures followed by English and then D.I. in 2 lectures. Lectures A, C and D have to be different days. (Lectures B and F have to be on the same day), but lecture E cannot be clubbed with A or G or D. Lecture G and H should come on the same day. Lecture A is a lecture on Quants and Lecture C cannot be on the last day. It is also known that there are at least 3 lectures on day 1.

6. Which of the following pairs of lectures can go along with lecture 'A' on Quants?
- (a) B, C (b) G, H
 - (c) D, E (d) Data inadequate
7. Which combination of lectures was arranged on the second day of the series?
- (a) D, E, F (b) B, C, E
 - (c) C, G, H (d) Data inadequate
8. Which of the following lectures were for D.I.?
- (a) D, F (b) B, C

(c) G, H

(d) Data inadequate

Directions for Questions 9 to 11: Five courses — A, B, C, D and E, each of one month duration are to be taught from January to May one after the other though not necessarily in the same order by lecturers P, Q, R, S and T. P teaches course ‘B’ but not in the month of April or May. Q teaches course ‘A’ in the month of March. R teaches in the month of January but does not teach course ‘C’ or ‘D’.

9. Which course is taught by S?

(a) C

(b) E

(c) Either C or D

(d) D

10. Which lecturer’s course immediately follows course B?

(a) Q

(b) P

(c) S

(d) T

11. Which course is taught in the month of January?

(a) C

(b) D

(c) E

(d) Data inadequate

Directions for Questions 12 to 15: The annual gathering of a college was organised on a day. Six different programmes—drama, singing, mimicry, speech, story-telling and dance are to be performed by six students A, B, C, D, E and F, not necessarily in the same order. The programme begins with a song not sung by B and ends with a dance. C performs mimicry immediately after the speech. E performs drama just before the dance. D or F are not available for the last performance. The speech is not given by A. An interval of 30 minutes is given immediately after mimicry with three more items remaining to be performed. D performs immediately after the interval.

12. Which item is performed by F?

(a) Song

(b) Dance

(c) Speech

(d) Data inadequate

13. Who performed the dance?

(a) A

(b) B

(c) Either A or B

(d) F

14. Who was the first performer?

(a) D

(b) E

(c) A

(d) Data inadequate

15. Who was the last performer?

(a) A

(b) B

(c) F

(d) Data inadequate

Directions for Questions 16 to 18: Six persons—Akshay, Bobby, Celina, Dimple, Esha and Faisal took up a job with XYZ Consultants in a week from Monday to Saturday. Each of them joined for different posts on different days. The posts were of Clerk, Officer, Technician, Manager, Supervisor and Sales Executive, though not in the same order.

Faisal joined as a Manager on the first day. Bobby joined as a Supervisor but neither on Wednesday nor Friday. Dimple joined as a Technician on Thursday. The officer joined the firm on Wednesday. Esha joined as a clerk on Tuesday. Akshay joined as a Sales Executive.

16. Who joined the firm on Wednesday?
- (a) Bobby (b) Celina
(c) Esha (d) Data inadequate
17. Who was the last to join the firm?
- (a) Esha (b) Faisal
(c) Bobby (d) Akshay
18. On which of the following days did the Sales Executive join?
- (a) Thursday (b) Friday
(c) Saturday (d) None of these

Directions for Questions 19 to 21:

- i. Six friends A, B, C, D, E and F are sitting along the sides of a hexagonal table for playing a game, though not necessarily in the same order.
- ii. F, who is sitting exactly opposite A, is to the immediate right of B.
- iii. D is between A and B and is exactly opposite to C.
19. Who are the people sitting next to A?
- (a) D & E (b) D & F
(c) C & E (d) B & D
20. Who is sitting opposite B?
- (a) E (b) F
(c) A (d) C
21. Three of the following are alike in a certain way on the basis of sitting positions and so form a group. Which is the one that does not belong to the group?
- (a) B, C (b) A, D
(c) B, F (d) E, A

Directions for Questions 22 to 25: A group of five boys—Abdul, Bony, Chandan, Devdas and Eram, and a group of five girls—Paro, Queen, Reena, Saifali and Tulika are standing in rows facing each other (not in the same order). The group of girls is facing north.

Eram is not at any of the ends. Chandan is to the immediate right of Bony and Devdas is to the

immediate left of Abdul, who is facing Paro. There are as many girls between Paro and Queen as between Reena and Saifali. Abdul is second to the left of Bony. Saifali and Reena are not facing either Bony or Devdas.

22. Which pair of boys is standing at the ends of the row?

- (a) Chandan & Devdas
- (b) Chandan & Bony
- (c) Devdas & Bony
- (d) Data inadequate

23. Which of the following is definitely true?

- (a) Chandan is third to the right of Devdas.
- (b) Devdas is facing Paro.
- (c) Chandan is facing Saifali.
- (d) None of these

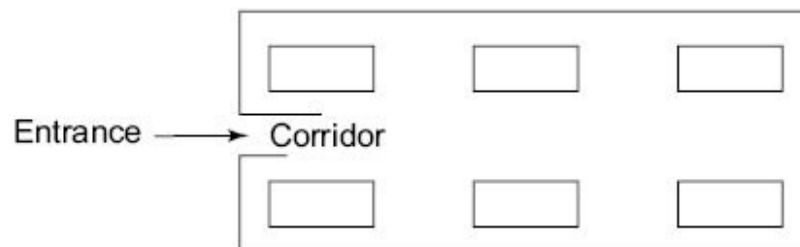
24. Who is standing to the immediate right of Abdul?

- (a) Eram
- (b) Chandan
- (c) Devdas
- (d) Data inadequate

25. Who is facing Bony?

- (a) Reena
- (b) Saifali
- (c) Queen
- (d) Data inadequate

Directions for Questions 26 to 29:



The plan above shows an office block for six officers—A, B, C, D, E and F. Both B and C occupy offices to the right of the corridor (as one enters the office block) and A occupies an office to the left of the corridor. E and F occupy offices on opposite sides of the corridor but their offices do not face each other. The offices of C and D face each other. E does not have a corner office. F's office is further down the corridor than A's, on the same side.

26. If E sits in his office and faces the corridor, whose office is to his left?

- (a) A
- (b) B
- (c) C
- (d) D

27. Whose office faces A's office?

(a) B

(b) C

(c)

(e) D

28. Who is/are F's neighbour(s)?

(a) A only

(b) A & D

(c) C

(d) B & C

29. D was heard telling someone to go further down the corridor to the last office on the right. To whose room was he trying to direct that person?

(a) A

(b) B

(c) C

(d) F

Directions for Questions 30 to 34: Four families decided to go for a picnic to Jhumri Talaiya and agreed to meet at a place called Rani ka Talab before moving for the picnic. One family has no kid, while the others have at least one kid each. Amongst each family with kids, at least one kid goes to the picnic. Following is the information about the families.

- i. The family with two kids came just before the family with no kids.
- ii. D who does not have any kids reached just before C's family.
- iii. P and his wife reached last with their only kid.
- iv. Q is not B's husband.
- v. Q and S are fathers.
- vi. C's and A's daughters go to the same school.
- vii. B came before D and met A when she reached the fixed place.
- viii. R stays farthest from the place and he is a good singer.
- ix. S explained that his son could not come because of exams.

30. Who amongst the females arrived third?

(a) A

(b) B

(c) C

(d) D

31. Which is the correct pair of husband and wife?

(a) S and D

(b) P and C

(c) Q and C

(d) S and A

32. Whose daughters go to the same school?

(a) Q and R

(b) P and R

(c) P and Q

(d) Q and S

33. Whose family has definitely more than one kid?

(a) R's

(b) S's

(c) Q's

(d) P's

34. Among the males, who arrived second?

(a) P	(b) Q
(c) R	(d) S

Directions for Questions 35 to 38: In a bar, there are seven frequent visitors who visit the bar daily. On being asked about their visit to the bar the preceding Sunday, the following were the answers:

Jai Chand: I came in first and the next two persons to enter were Sohan Singh and Shail Munshi. When I left the bar, Jai Prakash and Vinod Rai were present in the bar. Deepak Garg left with me.

Jai Prakash: When I entered the bar with Vinod Rai, Jai Chand was sitting there. There was someone else also, but I was not in a position to recognise him.

Shail Munshi: I went to the bar for a short while last Sunday and met Jai Chand, Sohan Singh and Deepak Garg there.

Sohan Singh: I left immediately after Shail Munshi left.

Deepak Garg: I met Jai Chand, Sohan Singh, Shail Munshi, Jai Prakash and Vinod Rai during my first visit to the bar. But I got an urgent call and came out of the bar with Jai Chand. When I went to the bar the second time, Jai Prakash and Vinod Rai were there.

Pradeep Kumar: I had some urgent work, so I did not sit in the bar for a long time. Jai Prakash and Deepak Garg were the only people in the bar while I was there.

Vinod Rai: I was drunk and I don't remember anything.

35. Who among Jai Prakash and Deepak Garg, entered the bar first?

(a) Jai Prakash	(b) Deepak Garg
(c) Both entered	(d) Cannot be determined

36. Who was sitting with Jai Chand when Jai Prakash entered the bar?

(a) Sohan Singh	(b) Shail Munshi
(c) Deepak Garg	(d) Pradeep Kumar

37. How many of the seven members did Vinod Rai meet on Sunday in the bar?

(a) 2	(b) 3
(c) 4	(d) 5

38. Who were the last two persons to leave the bar?

- | |
|---------------------------------|
| (a) Jai Chand & Deepak Garg |
| (b) Pradeep Kumar & Deepak Garg |
| (c) Jai Prakash & Pradeep Kumar |
| (d) Jai Prakash & Deepak Garg |

Directions for Questions 39 to 42: Seven sports awardees—A, B, C, D, E, F and G are to be honoured at a special luncheon. The players will be seated on the dias in a row. A and G have to catch the flight for their One Day International cricket match and so must be seated at the extreme

right. B, the Rajiv Gandhi Khel Ratna recipient must be in the centre. C and D are bitter rivals and therefore must be seated as far apart as possible.

39. Which of the following cannot be seated at either end?
- (a) C (b) D
(c) F (d) Cannot be determined
40. Which of the following pairs cannot be seated together?
- (a) B & D (b) C & F
(c) D & G (d) E & A
41. Which of the following pairs cannot occupy the seats on either side of B?
- (a) F & D (b) E & G
(c) D & E (d) None of these
42. What can be the position of C from the right side?
- (a) Third (b) Seventh
(c) Third or Seventh (d) Cannot be determined

Directions for Questions 43 to 47: Study the following information carefully and answer the questions that follow:

Six friends—Alok, Bheem, Chandar, Devdas, Earl and Ferguson are sitting on a bench facing in the same direction. Chandar is sitting between Alok and Earl; Devdas is not at the end. Bheem is sitting to the immediate right of Earl. Ferguson is not at the right end.

43. Who is to the immediate right of Ferguson?
- (a) Devdas (b) Alok
(c) Either Devdas or Alok
(d) Cannot be determined
44. How many persons are there to the left of Chandar?
- (a) One (b) Two
(c) Three (d) Four
45. Who is fourth from the left end?
- (a) Alok (b) Chandar
(c) Bheem (d) Cannot be determined
46. Who is at the left end?
- (a) Ferguson (b) Alok
(c) Bheem (d) Cannot be determined
47. Which of the following is sitting to one side of Devdas?

- (a) Ferguson-Earl
(c) Ferguson-Chandar

- (b) Ferguson-Bheem
(d) None of these

Answer Key

1. (c)	2. (b)	3. (d)	4. (b)
5. (d)	6. (b)	7. (d)	8. (d)
9. (c)	10. (a)	11. (c)	12. (d)
13. (c)	14. (d)	15. (d)	16. (b)
17. (c)	18. (b)	19. (a)	20. (a)
21. (a)	22. (a)	23. (d)	24. (a)
25. (c)	26. (c)	27. (d)	28. (a)
29. (b)	30. (d)	31. (b)	32. (c)
33. (b)	34. (d)	35. (b)	36. (c)
37. (b)	38. (d)	39. (c)	40. (d)
41. (b)	42. (c)	43. (a)	44. (c)
45. (b)	46. (a)	47. (d)	

Solutions

SET 1 Questions 1 to 5 For this question, start by using the direct clues first. We know that there are six cards P, Q, R, S, T, U; six colours—blue, red, green, grey, yellow and brown and, six pictures—King, Princess, Queen, Palace, Joker and Prince. The following set of deductions gives us the entire solution of the problem.

The second part of the third statement is the most directly usable → P-Brown-Queen-Extreme right. We also know that R-King-Grey-Fifth from Right (ivth statement).

Also Q being next to R, the following arrangements are possible

Possibility Table 1:

Q	R	--	--	--	P
	King				Queen
	Grey				Brown

And Possibility Table 2:

--	R	Q	--	--	P
	King				Queen

From this point we start using the indirect clues.

From statement (iii), Palace-Blue-Not S $\rightarrow$ Hence T or U Further, from statement (iv), Princess — Not S and not T, $\rightarrow$ Not Green or Yellow $\rightarrow$ Hence, Red and U. This further gives us Palace — T. Blue.

Hence, S must be the joker (only pair left). Also, green and yellow must be shared between Q and S.

Thus, the following pairings emerge:

P — Brown — Queen

Q — Green/Yellow — Prince

R — Grey — King

S — Yellow/Green — Joker

T — Blue — Palace

U — Red — Princess

At this point we have used all the statements. Hence go straight into the questions.

For Question 1: for the Princess card (U) to be immediately between the Palace (T) and the Prince (Q), Possibility Table 2 must emerge to be the correct one. In such a case, the arrangement of cards becomes:

S R Q U T P.

Hence the Joker's cards must be at the extreme left. Option (c) is correct.

The remaining 4 questions can be directly answered from what is available.

2. U-Red is correct. Option (b) is correct.

3. Data inadequate since we don't know whether the Joker is yellow or green. Option (d) is correct.

4. The Palace is on Card T. Option (b) is correct.

5. Data remains inadequate since we do not know which colour is for which card. Option (d) is correct.

SET 2 Questions 6 to 8: Given that A, C and D have to be separate and that A is Quants, and C cannot be on the last day. Also that there are 3 lectures (at least) on day 1, the order of A, C and D must be

Day 1	Day 2	Day 3
A	C	D

Further B cannot be clubbed with A or D, hence must be on the second day. Thus F must also be on the same day. This gives us the following table.

Day 1	Day 2	Day 3
A	C	D
	B	
	F	

This leaves us with G, H and E. Since, Day 1 has to have at least 3 lectures, G and H must be on day 1. This leaves us with E, which can be placed on either day 1 or 2 or 3.

Thus, the final table is:

Day 1	Day 2	Day 3
A, G, H, E?	C, B, F, E?	D, E?

Hence the answers are:

6. G, H. Option (b) is correct.
7. The data is inadequate since we do not know whether E was on Day 2 or not. Option (d) is correct.
8. Again, the data is inadequate since we do not know for sure which the last 2 lectures were. Option (d) is correct.

SET 3 Questions 9 to 11: Using the three clues we get the following pairings:

P — B — Not April or May

Q — A — March

R—Not C or D — January

Put them together to get the following table.

A	B	C	D	E
Q	P			R
March	February			January

This leaves S and T to be teaching either C or D and either in April or May.

9. We do not know who teaches C or D (between S & T). Hence Option (c) is correct.
10. Course B occurs in February. Hence, we need to look for who is teaching in March. The answer to the question is Lecturer Q. Option (a) is correct.
11. In January, Course E is taught. Option (c) is correct.

SET 4 Questions 12 to 15:The first two statements are just introductions to the situation. Going ahead from third statement onwards, the following chain of thoughts should arise.

 REACTION TRACKER

Statement	Reaction
3	<u>Song</u> _ _ _ _ _ <u>Dance</u>
4	Song Not B → To be used later
5	To be used later
6	<u>Song</u> _ _ _ Drama/E Dance
7	D or F not dance. To be used later (since it is an indirect clue)
8	To be used later
9	Song – Mimicry/C – Drama/E Dance
	Song – <u>Mimicry</u> _ _ <u>Drama</u> _ _ Dance
	C C D E

At this stage, use Statement 4 to get the following figure. Since speech comes before mimicry, storytelling comes after mimicry.

<u>Song</u>	<u>Speech</u>	<u>Mimicry</u>	<u>Storytelling</u>	<u>Drama</u>	<u>Dance</u>
		C	D	E	

The unused clues at this stage are (B not song): (F not last), (A not speech).

Using them does not give a definite placement for any of A, B or F.

- Hence,
- 12. Data inadequate, since F can be either song or speech. Option (d) is correct.
 - 13. Either A or B. Option (c) is correct.
 - 14. Can be either A or F. Hence, data inadequate. Option (d) is correct.
 - 15. Again could be A or B. Hence, data inadequate. Option (d) is correct.

SET 5 Questions 16 to 18: Basic information:

Six persons A, B, C, D, E & F on six days, Monday to Saturday; six posts — Clerk (C), Officer (O) Technician (T), Manager (M), Supervisor (S) and Sales Executive (SE).

The second paragraph gives the clues directly to fit in the following table:

A → Sales Executive	
B → C → D → Technician E → Clerk F → Manager	X Wed, X Friday Thursday Tuesday Monday

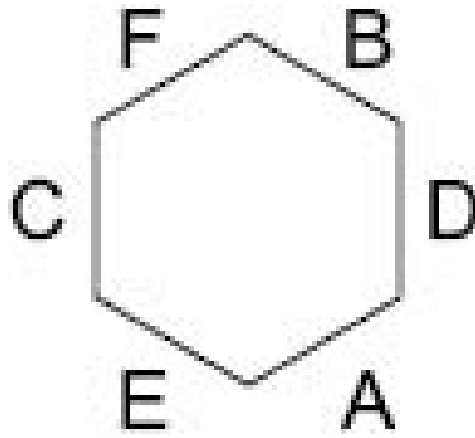
We also know that the officer joined on Wednesday. It can only be Celina (C). Thus, the table will look like:

A → Sales Executive	Friday
B → Supervisor C → Officer D → Technician E → Clerk F → Manager	Saturday Wednesday Thursday Tuesday Monday

Thus the answers are:

- 16. Celina (b)
- 17. Bobby (c)
- 18. Friday (b)

SET 6 Questions 19 to 21: The arrangement is:



Hence,

19. (a) D & E
20. (a) E
21. (a) B, C

SET 7 Questions 22 to 25: Since Chandan-Bony (C-B) and Abdul-Devdas (A-D) are definitely next to each other in that order (note: C is to the right of B will be represented by C-B when they are facing South), Eram (E) will definitely be in the centre place (as he is not at the end).

This gives us two possible arrangements for the men:

- (1) C B E A D or (2) A D E C B
- (2) is not possible since Abdul has to be second to Bony's left.

Thus the arrangement is:

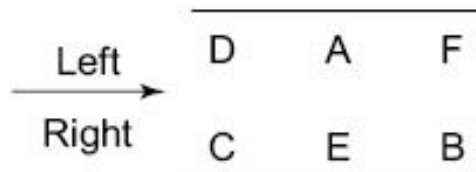
<u>C</u>	<u>B</u>	<u>E</u>	<u>A</u>	D
<u>R/S</u>	Q	<u>S/R</u>	P	T

(Where Paro, Queen, Reena, Saifali and Tulika are represented by P, Q, R, S, T respectively)

The answer is:

22. Chandan and Devdas (a)
23. (d)
24. Eram (a)
25. Queen (c)

SET 8 Questions 26 to 29:



From the last sentence, we get that F is also on the left side, so E will be on the right side. D will be on the left side. E does not have a corner office so he must be in the middle. E and F do not face each other and F's office is further down the corridor, so F occupies the last office on the left side. Office of C and D face each other, so C will have the first office on the right side and D will have the first office on the left side.

The answers are:

- 26. (c) C’s office is on E’s left.
- 27. (d) E’s office faces A’s office.
- 28. (a) Only A is F’s neighbour.
- 29. (b) He was giving directions to reach B’s office.

SET 9 Questions 30 to 34: The following reaction tracker table would help you solve this question set.

 REACTION TRACKER TABLE

Opening Paragraph	4 families, one with no kid and others with at least one kid each.

Statement (i) (Family with 2 kids-Family with no kids)

At this point, we just make a visual representation of this clue. It is not directly usable as it gives many possibilities.

Further, it is also now known to us that we are trying to create a structure of the order in which the respective families come in. Mentally, we picture this as:

Statement (ii) D just before C. Not usable at this point. Also D has no kids.

Statement (iii) Usable at this point

			P & Wife
			Only kid

Statement (iv) Q is not the husband of B (means B is female). Again this clue is not directly usable.

Statement (v) Q and S are fathers. Hence males. Not usable at this point.

Statement (vi) A & C have daughters. Not usable at this point.

Statement (vii) A – B – D. Add the reaction of C coming after D (Statement ii) and we get the entire structure for the 4 women’s arrival. The table now becomes.

A	B	D	C
		No kids	1 kid

Add Statement (i)’s reaction and the table further evolves to:

A	B	D	C
Daughter	2 kids	No kids	1 kid

Now concentrate on the husbands (Q, R & S)

Statement (viii) No information

Statement (ix) S must have 2 kids. Since his son has not come and it is known that every family which has kids has at least 1 kid coming to the picnic. Thus the table now evolves to the following:

Q-A	S – B	R – D	P & C
Daughter	2 kids	No kids	1 kid

Note: Since Q is a father he cannot be D’s husband and only R is D’s only possible husband.

Hence the answers are:

- 30. (d)
- 31. (b)
- 32. (c)
- 33. (b)
- 34. (d)

SET 10 Questions 35 to 38: This question looks extremely complicated due to the multiple statements, but the main issue required to be resolved while solving this question is the structure of the diagram. While solving this question concentrate mainly on who is present in the bar at different times of the day and correlate this information to the statements. Also try to number the events so as to give order to the various going-ins and coming-outs of the people. The following reaction tracker table gives the step by step reactions to the clues in the question.

REACTION TRACKER TABLE

Statement of	Reaction
Jai Chand (JC)	Event 1: JC comes in Event 2: Sohan Singh (SS) comes in. Event 3: Shail Munshi (SM) comes in. Constraint: JC leaves with Deepak Garg (DG) leaving Jai Prakash (JP) and Vinod Rai (VR) in the bar.
Jai Prakash (JP)	Event (Number not known): JP and VR enter. Constraint: JC and someone else was there.
Shail Munshi (SM)	Event: SM enters Constraint: Meets JC, SS and DG
Sohan Singh (SS)	Event x: SM leaves Event (x + 1): SS leaves
Deepak Garg (DG)	Event: DG enters. Constraints: Meets SS, SM, JP and VR during his first visit. Event: DG and JC leave. Event: DG enters for second time. Constraint: JP and VR are there when DG enters again. (No one else present)
Pradeep Kumar (PK)	Event: PK enters Constraint: Only JP and DG are present at this time.
Vinod Rai (VR)	No info. Deductions: When JP and VR enter only 2 people are there. We also know the first 3 events—JC enters, SS enters and SM enters. Also, DG meets SC, SS, SM, JR & VR in his first visit. This gives us that:

- Event 4: DG enters
- Event 5: SM leaves
- Event 6: SS leaves
- Event 7: JP and VR enter (at this time only JC and DG are there)
- Event 8: JC and DG leave (Now only JP and VR are present)
- Event 9: DG comes back again (now JP, VR and DG are inside)
- Event 10: VR leaves (Since when PK enters only JP and DG are there)
- Event 11: PK enters
- Event 12: PK leaves

Hence the answers are:

35. DG enters before JP. Hence (b).
36. DG was sitting there (Event 7). Hence (c).
37. VR meets JC, DG and JP. He comes in after SM and SS have left and leaves before P enters. Hence, he meets only 3 people. Hence (b).
38. JP and DG must be leaving last since they are there when PK leaves. Hence (d).

SET 11 Questions 39 to 42:

REACTION TRACKER

Statement	Reaction
Statement 1	----, ----, ----, ----, ----, ---- A, B, C, D, E, F and G
Statement 2 and 3	----, ----, ----, B, ---- A, G OR ----, ----, ----, B, ---G, A.
Statement 4	1 st and 5 th places must be occupied by C and D in any order.

Hence the answer are:

39. The end seats have to be occupied by either A, G, C or D. F cannot occupy any end seat Hence, option (c) is correct.
40. For E and A to be together, the only way is to put E on the 5th seat. But this is not possible since the 5th seat has to have either C or D. Hence, option (d) is the correct answer.
41. One of the seats adjacent to B has to be taken by either C or D. Hence, option (b) is the correct answer.
42. C can be third or seventh. Hence, option (c) is correct.

SET 12 Questions 43 to 47: From the clues it is evident that ACEB should be 4 people in that order and should be sitting together with no one in between. This means that they can be seated in one of the following 3 ways:

- Possibility 1: A C E B __ __
- Possibility 2: __ A C E B __
- Possibility 3: __ __ A C E B

This leaves us to place two people—D and F. Since, Devdas is not at the end and Ferguson is not a

the right end, we know that Possibility 1 and Possibility 2 get rejected. This leaves us with Possibility 3 and the final placement would be:

F D A C E B

The answers are:

43. (a)

44. (c)

45. (b)

46. (a)

47. (d)

Logical Reasoning based on Rankings

Reasoning questions on Rankings involve an ordering of people/objects based on their heights/weights/performance in an exam, etc. As the name suggests, in questions on rankings you are supposed to place people/objects in a decreasing or increasing order based on an attribute being measured.

Key skills required in solving Logical Reasoning questions based on rankings:

- (i) The ability to visualise the structure in which the rankings have to be created
- (ii) The ability to order the clues in the correct order of usage (as explained in the theory of logical reasoning)
- (iii) The ability to perceive what indirect clues are talking about, and find the appropriate point in the solving process about how to use them
- (iv) The ability to convert clues written in language form into visual cues so that you do not need to read the text again and again, and also are able to 'see' all the clues at one go.

The following illustrated examples (with the reaction tracker used to explain the solutions) would help you get acquainted with questions based on rankings. For each of the following questions first try to solve them on your own before looking at the reaction tracker process of solving the same.

Example 1

Directions for Questions 1 to 4 (Constraint Based Arrangement):

- i. Six students A, B, C, D, E and F participated in a self-evaluation test of Quants and Data Interpretation (D.I.).
 - ii. The total marks of A in Quants was just above C and in D.I. just above F.
 - iii. B was just above C in D.I. but he scored less than D in Quants.
 - iv. F got more marks than D and E in D.I. but did not perform as well in Quants as in D.I. as compared to D and E.
 - v. No one is in between C and D in Quant and C and A in D.I.
1. Who got the highest marks in D.I.?

- (a) A
 - (b) B
 - (c) C
 - (d) Data inadequate
2. Which of the following students has scored the least in D.I.?
- (a) Only D
 - (b) Only E
 - (c) Only D or E
 - (d) None of these
3. Who was just below D in Quants?
- (a) B
 - (b) E
 - (c) C
 - (d) Data inadequate
4. Which of the given statements is not necessary to answer the questions?
- (a) (ii)
 - (b) (iii)
 - (c) (iv)
 - (d) All are necessary

REACTION TRACKER

From the second statement we have:

QUANTS	D.I.
A	A
C	F

From Statement (iii) we have: B just above C in D.I. & B somewhere below D in Quants. At this point our figure remains the same as we cannot put this information into the figure.

QUANTS	D.I.
A	A
C	F

From Statement (iv) we have:

QUANTS	D.I.
A	A
C	F

From Statement (v) we have:

QUANTS	D.I.
A	B
C	C
D	A
	F
	D & E below F

This leads us to the following table:

In Quants	In Data Interpretation
A	B
C	C
D	A
Also, B is less than D,	F
F is below D and E.	D and E are below F.
Note: E could be placed	Hence B must be first.
anywhere as we don't have	
any information about E.	

The answers are:

1. B (b)
2. D or E (c)
3. Data inadequate (d)
4. All are necessary (d)

Example 2 Solve the following questions based on the information provided:

- i. A, B, C, D, E, F, G and H are eight friends. Three of them play cricket and table tennis each and two of them play football. Each one of them has different height.
- ii. The tallest does not play football and the shortest does not play cricket.
- iii. F is taller than A and D but shorter than H and B.
- iv. E who does not play cricket, is taller than B and is second to the tallest.
- v. G is shorter than D but taller than A.
- vi. H, who is fourth from the top, plays table tennis with D.
- vii. G does not play either cricket or football. B does not play football.
1. Who is the tallest?

(a) B

(b) H

(c) C

(d) Data inadequate
2. Who is the shortest?

(a) G

(b) D

- (c) A (d) Data inadequate
3. Which of the following pairs of friends plays football?
- (a) EA (b) EH
- (c) HF (d) Data inadequate
4. What is F's position from the top when they are arranged in descending order of their height?
- (a) Fifth (b) Fourth
- (c) Sixth (d) None of these

REACTION TRACKER

The first direct clue in the question is Clue (vi). Clue (vii) is the next clue to use as using the last 2 clues we get that H,G and D play table tennis (thus fixing our list of TT players). Hence, when we read that B does not play football we can deduce that B plays cricket—as he cannot be playing table tennis since we already know the three people playing TT. The other direct clue that we can use for placing an individual in our starting figure based on height is clue (iv). According to this, E does not play cricket (hence must be football) and he is second to the tallest. At this point we also need to keep aside the information that E is taller than B outside the purview of the figure for later use. At this point our figure would be as given below with the additional knowledge that H,G & D play TT and E plays cricket.

E	Football
H	Table tennis

From this point we need to first focus on placing the other 6 people in the decreasing order of their heights inside the figure above.

Clue (iii) combined with Clue (v) helps us understand that:

Between A, G and D, the order of heights from lower to higher would be A $\propto$ G $\propto$ D.

And Since F is taller than A and D, F must be taller than A $\propto$ G $\propto$ D. Also because F is shorter than H and B, F cannot take the topmost or the third position from top in the figure. Based on these deductions the figure changes to:

E	Football
H	Table tennis
F	
D	Table tennis
G	Table tennis
A	

Placing B in the above figure is easy because we had kept aside the information that “E is taller than

B”. Thus, B can only take the third place position and the highest place goes to C. Thus the figure becomes:

C	
E	Football
B	Cricket
H	Table tennis
F	
D	Table tennis
G	Table tennis
A	

At this point we can use the clues about who does not play what and identify the remaining 2 people for cricket and the remaining person for football as:

The tallest does not play football Æ deduction Æ the tallest plays cricket.

The shortest does not play cricket Æ deduction Æ the shortest plays football. The table can be completed at this point as below:

C	Cricket
E	Football
B	Cricket
H	Table tennis
F	Cricket
D	Table tennis
G	Table tennis
A	Football

The answers can be read off easily at this point from the table above:

1. C is the tallest. Option (c).
2. A is the shortest. Option (c).
3. E & A are the two football players. Option (a).
4. F is placed fifth from the top. Option (a).

EXERCISE ON RANKINGS

Directions for Questions 1 to 4: (Matching Puzzle):

Mr Bankatlal acted as a judge for the beauty contest. There were four participants, viz. Ms Andhra Pradesh, Ms Uttar Pradesh, Ms West Bangal and Ms Maharashtra. Mrs Bankatlal, who was very anxious about the result asked about it as soon as he was back home. Mr Bankatlal told her just that the one who was wearing the yellow saree won the contest. When Mrs Bankatlal pressed for further details, he elaborated as follows:

- i. All of them were sitting in a row.

- ii. All of them wore sarees of different colours, viz. green, yellow, white, red.
- iii. There was only one runner-up and she was sitting beside Ms Maharashtra.
- iv. The runner-up was wearing the green saree.
- v. Ms West Bengal was not sitting at the end and was not the runner-up.
- vi. The winner and the runner up are not sitting adjacent to each other.
- vii. Ms Maharashtra was wearing a white saree.
- viii. Ms Andhra Pradesh was wearing a green saree.
- ix. Participants wearing yellow saree and white saree were at the ends.

1. Who wore the red saree?
 - (a) Ms Andhra Pradesh
 - (b) Ms West Bangal
 - (c) Ms Uttar Pradesh
 - (d) Ms Maharashtra
2. Ms West Bengal was sitting adjacent to
 - (a) Ms Andhra Pradesh and Ms Maharashtra
 - (b) Ms Uttar Pradesh and Ms Maharashtra
 - (c) Ms Andhra Pradesh and Ms Uttar Pradesh
 - (d) Ms Uttar Pradesh only
3. Which saree was worn by Ms Andhra Pradesh?

(a) Yellow	(b) Red
(c) Green	(d) White
4. Who was the runner-up?
 - (a) Ms Andhra Pradesh
 - (b) Ms West Bengal
 - (c) Ms Uttar Pradesh
 - (d) Ms Maharashtra
5. Who was the winner of the beauty contest?
 - (a) Ms Andhra Pradesh
 - (b) Ms West Bengal
 - (c) Ms Uttar Pradesh
 - (d) Ms Maharashtra

Directions for Questions 6 to 10: Study the following information carefully and answer the questions given below:

Five geeks (enthusiasts) entered a comic book character costume contest held during the comic con festival. The contestants dressed up and were given two awards—one for being best in a particular category (i.e. strongest, smartest, most efficient, scariest and powerful) and one for being ranked (i.e. 1st, 2nd, 3rd, 4th and 5th). Determine who wore what costume and what two awards they received.

- (i) The winner of the most efficient character's costume was ranked just above Sacha's character's costume (which wasn't the superman).
- (ii) The winner of the strongest category (which wasn't the Wonderwoman) was not worn by Billy.
- (iii) The joker's costume was ranked just above Sacha's costume (which wasn't the strongest costume winner).
- (iv) The Wonderwoman costume ranked just above the scariest costume and just below Vladimirs's costume.
- (v) The Batman costume was placed just higher than the winner of the strongest costume and just lower than Catherine's costume.
- (vi) The Lex Luthor costume ranked just above Jelena's (which wasn't the Superman) and just below the smartest.

6. Who among the following ranked fifth?

(a) Billy	(b) Jelena
(c) Vladimir	(d) Can't be determined

7. Who among the following got the award of the scariest costume?

(a) Billy	(b) Catharine
(c) Sacha	(d) Vladimir

8. Which of the following is the costume of Sacha?

(a) Joker	(b) Batman
(c) Lex Luthor	(d) Wonderwoman

9. Which of the following shows the correct order of ranks 1st, 2nd, 3rd, 4th and 5th respectively?

- (a) Billy, Jelena, Vladimir, Sacha, Catherine
- (b) Vladimir, Sacha, Catherine, Billy, Jelena
- (c) Catherine, Sacha, Vladimir, Jelena, Billy
- (d) Vladimir, Billy, Catherine, Sacha, Jelena

10. Which of the following are not correctly matched?

Costume	Category
I. Joker	Most Efficient
II. Batman	Smartest
III. Lex Luthor	Strongest

IV. Wonderwoman
V. Superman

Scariest
Powerful

(a) Only IV and V

(b) Only III and IV

(c) Only II and III

(d) Only I and II

Directions for Questions 11 to 15: Sprinters in Olympics running on the track are carrying numbers from 1 to 7 at the back of their vests. They complete the race when their feet touches the finish line at 9.10, 9.20, 9.30 seconds till 9.7 seconds i.e. at an interval of one mili second each. Each athlete is ranked from 1 (for the fastest) to 7 (for the slowest). The following additional information is known:

- (i) The square of the highest total of the vest number and rank is 169 which occurs only once.
- (ii) The square of the lowest total of vest number and rank is 16 and occurs only once.
- (iii) The square of the total of vest number and rank = 81, occurs thrice.
- (iv) The winners' vest no. exceeds that of the first runner up.

11. The vest number of the sprinter coming first is:

(a) 3

(b) 6

(c) 1

(d) 5

12. The sprinter number finishing second is:

(a) 7

(b) 6

(c) 4

(d) 3

13. The sprinter number finishing third is:

(a) 6

(b) 3

(c) 1

(d) 2

14. The sprinter number finishing last is:

(a) 7

(b) 2

(c) 5

(d) 1

15. The sprinter number finishing last but one is:

(a) 7

(b) 2

(c) 5

(d) 1

Directions for Questions 16 to 20: In a bike racing competition, ten selected bikers from a city were to compete in various stunts. The structure of the competition requires all bikers to compete in five events before the elimination round begins so as to choose the top five bikers who will participate from that city at the national level. The ranks attained by each biker in the five events from first to tenth are:

Names	Event A	Event B	Event C	Event D	Event E
Alex	2	5	8	5	1
Ben	8	1	7	1	2

Charlie	5	6	1	4	9
Devon	1	10	2	10	3
Ethan	9	4	9	2	7
Frank	6	7	6	6	8
Garry	3	2	3	7	4
Harry	10	8	5	3	10
Ian	7	9	10	8	5
John	4	3	4	9	6

It is also stated that:

- i. The biker with the first rank in most events gets to eliminate the biker with the last rank in most of the events.
- ii. The first rank holder of event E is not to be eliminated.
- iii. A biker whose highest rank and the lowest rank difference is the second highest among all bikers is not to be eliminated.
- iv. A biker who does not rank in the top five positions in any of the five events gets eliminated.
- v. The biker with the same rank in most of the events gets to eliminate that event E biker with an immediately lower rank than his same ranks in all events.
- vi. A biker who got the second highest rank in event D gets to eliminate the biker who got the same rank in event B.
- vii. Any biker who gets the first rank in two or more events will not be eliminated.
- viii. Among the bikers who got the lowest rank in event B and the one who got the ninth rank in event D, the one who got a higher rank in the event E gets to eliminate the other.
- ix. The biker whose sum of all the ranks in the events is the highest and does not get eliminated by any other condition will not be eliminated.

It is also known that if more than 5 people are getting eliminated by one rule or the other, then it is allowed. However, if less than 5 people are getting eliminated, then there is a toss up between the remaining ones and the results are determined by the toss of a coin.

16. Who among the following is a biker who does not get a chance to eliminate another biker?

(a) Ben	(b) Charlie
(c) Devon	(d) Frank
17. Who among the following is a biker who does not rank in the top four positions in any of the five events but does not get eliminated?

(a) Ethan	(b) Frank
(c) Harry	(d) Ian
18. If a new condition is included in the problem stating that, ‘any biker who gets second rank in any event will not be eliminated’, then who among the following will not get eliminated?

(a) Garry	(b) Harry

- (c) Ian (d) John
19. Which of the following conditions if not included in the problem do not change the final solution?
- (a) ii (b) iv
(c) vi (d) viii
20. It is found that the results of event D are wrong and the last two ranks have been mistakenly interchanged, then who among the following bikers cannot be definitely eliminated in the elimination round?
- (a) Ethan & Devon (b) Garry & John
(c) Harry & Devon (d) John & Devon

Directions for Questions 21 to 23: Refer to the following information to answer the questions that follow.

- A. Seven students A, B, C, D, E, F and G take a series of tests.
B. No two students get similar marks.
C. G always scores more than A.
D. A always scores more than B.
E. Each time either C scores the highest and E gets the least, or alternatively D scores the highest and F or B scores the least.
21. If G is ranked fifth, which of these must be true?
- (a) D scores the highest.
(b) C is ranked second.
(c) E is ranked third.
(d) B is ranked fourth.
22. If D is ranked second, which of the following can be true?
- (a) A gets more than C.
(b) G gets more than D.
(c) A gets more than G.
(d) F gets more than G.
23. If D is ranked sixth and B is ranked fifth, which of these can be true?
- (a) G is ranked first or fourth.
(b) C is ranked second or third.
(c) A is ranked second or fifth.
(d) F is ranked third or fourth.

Directions for Questions 24 to 28: Each of the following questions gives information about an

individual attribute through statements 1, 2, and 3. For each question if the first two statement are true, what conclusion can be drawn about the third statement?

24.

(1) *Gulabjamuns* are sweeter than *rosagullas* but *laddoos* are sweeter than *gulabjamuns*.

(2) *Rosagullas* are sweeter than *chamchams* but *pethas* are sweeter than *rosagullas*.

(3) Of the five kinds of sweets, *chamchams* are the least in terms of sweetness.

If the first two statements are true, the third statement is

(a) True

(b) False

(c) Uncertain

25. On the day the triplets were born to Moti the female dog,

(1) A weighs more than B.

(2) B weighs less than C.

(3) Of the three puppies, C weighs the most.

If the first two statements are true, the third statement is

(a) True

(b) False

(c) Uncertain

26. At a car showroom,

(1) the price of Car A was lower than that of Car B.

(2) the price of Car C was lower than that of Car B.

(3) the price of Car A was higher than that of Car C.

If the first two statements are true, the third statement is

(a) True

(b) False

(c) Uncertain

27. In the country of Mohenjo Daro,

(1) Cricket is bigger than Football and smaller than Tennis.

(2) Hockey is smaller than Tennis and bigger than Cricket.

(3) Football is bigger than Hockey.

If the first two statements are true, the third statement is

(a) True

(b) False

(c) Uncertain

28. Ramu has 3 marble boxes.

(1) Box A contains more marbles than Box B.

(2) Box B contains more marbles than Box C.

(3) Box C contains more marbles than Box A.

If the first two statements are true, the third statement is

(a) True

(b) False

(c) Uncertain

Directions for Questions 29 to 32: Five cities all got more rain than usual this year. The five cities are: Aurangabad, Ahmednagar, Pune, Mumbai and Nagpur. The cities are located in five different areas of the country: the mountains, the forest, the coast, the desert, and in a valley. The rainfall amounts were: 24 inches, 54 inches, 64 inches, 88 inches and 130 inches.

- The city in the desert got the least rain; the city in the forest got the most rain.
- Pune is in the mountains.
- Aurangabad got more rain than Mumbai.
- Ahmednagar got more rain than Nagpur, but less rain than Pune.
- Mumbai got 88 inches of rain.
- The city in the mountains got 64 inches of rain; the city on the coast got 54 inches of rain.

29. Which city is in the desert?

(a) Aurangabad

(b) Ahmednagar

(c) Pune

(d) Nagpur

30. Which city got the most rain?

(a) Aurangabad

(b) Ahmednagar

(c) Pune

(d) Mumbai

31. How much rain did Ahmednagar get?

(a) 24 inches

(b) 54 inches

(c) 64 inches

(d) 88 inches

32. Where is Mumbai located?

(a) The mountains

(b) The coast

(c) In a valley

(d) The desert

Answer Key

1. (b)	2. (c)	3. (c)	4. (a)
5. (c)	6. (a)	7. (a)	8. (b)
9. (c)	10. (a)	11. (b)	12. (d)
13. (d)	14. (b)	15. (a)	16. (b)
17. (d)	18. (a)	19. (a)	20. (d)
21. (a)	22. (d)	23. (d)	24. (c)
25. (c)	26. (c)	27. (c)	28. (b)
29. (d)	30. (a)	31. (b)	32. (c)

Solutions

Solutions 1–4.

Based on the information given, we can come up with the following alternatives:

Possibility 1:

Runner Up			
Miss UP	Miss WB	Miss AP	Miss Maharashtra
Yellow	Red	Green	White

Possibility 2:

Runner Up			
Miss Maharashtra	Miss AP	Miss WB	Miss UP
White	Green	Red	Yellow

In either case the answers are the same:

1. Miss West Bengal wore red. Option (b) is correct.
2. Miss West Bengal was adjacent to Miss Andhra Pradesh and Miss Uttar Pradesh. Option (c) is correct.
3. Miss Andhra Pradesh wore the green saree. Option (c) is correct.
4. Miss Andhra Pradesh was the runner up as she wears green and sits next to Miss Maharashtra in both cases. Option (a) is correct.
5. Miss Uttar Pradesh was the winner. Option (c) is correct.

Reaction Tracker for Questions 6 to 10: This question seems to be quite confusing due to the reason that all the clues seem to be the same/similar in nature. While that might be true on the surface, there are a few distinctions in the ways the clues can be used—especially when we look at the clues in the correct order.

On combining clues (i) and clues (iii) we would get the following Table 1:

Costume	Person	Category best
Joker		Most efficient
	Sacha	

Note: We combine Clues (i) and (iii) because Clue (ii) is not usable at this stage, as it is what can be described as “a checking” clue, i.e. once we have multiple final figure possibilities in place, we use clues of the nature of clue (ii) and also clue (i) (Sacha was not the superman), to eliminate one of the possibilities.

Clue (iv) will give us Table 2:

Costume	Person	Category best
	Vladimir	
Wonderwoman		
		Scariest

Clue (v) would give us Table 3:

Costume	Person	Category best
	Catherine	
Batman		
		Strongest

Clue (vi) would give us Table 4:

Costume	Person	Category best
		Smartest
Lex Luthor		
	Jelena	

From this point we need to focus on Sacha’s costume. We would realise that Sacha cannot wear Superman (given clue (i)); Cannot wear joker (as joker is above Sacha according to Table 1) and cannot wear Lex Luthor because we cannot superimpose Table 4 on Table 1 by making Sacha correspond to Lex Luthor as it leads to the joker being the smartest (but Table 1 has joker as most efficient).

This leaves us with 2 possibilities for Sacha’s costume—Wonderwoman or Batman.

Let us take a look at how possibility 1 rolls out:

For Sacha to be **Wonderwoman** we would need to merge Tables 1 and 2 to get Table 5 below:

Costume	Person	Category best
Joker	Vladimir	Most Efficient

Wonderwoman	Sacha	
		Scariest

To this we need to merge Table 3, which would give us Table 6 below:

Costume	Person	Category best
Joker	Vladimir	Most Efficient
Wonderwoman	Sacha	
	Catherine	Scariest
Batman		
		Strongest

There is only one way from this point that Table 4 can get merged into Table 6. That would give us:

Costume	Person	Category best
Joker	Vladimir	Most Efficient
Wonderwoman	Sacha	Smartest
Lex Luthor	Catherine	Scariest
Batman	Jelena	
		Strongest

That leaves us with a final solution as below.

Costume	Person	Category best
Joker	Vladimir	Most Efficient
Wonderwoman	Sacha	Smartest
Lex Luthor	Catherine	Scariest
Batman	Jelena	Most powerful
Superman	Billy	Strongest

We can clearly see that this solution table contradicts clue (ii) – i.e. Billy was not the strongest. Thus, we reject Possibility 1 and move to a possibility which would give us that Sacha must be Batman. In this case the thinking pattern would go as follows:

Combining Table 3 with Table 1:

Costume	Person	Category best
Joker	Catherine	Most efficient

Batman	Sacha	
		Strongest

To this we merge Table 3 and get:

Costume	Person	Category best
Joker	Catherine	Most efficient
Batman	Sacha	
	Vladimir	Strongest
Wonderwoman		
		Scariest

To this we merge Table 4 and get:

Costume	Person	Category best
Joker	Catherine	Most efficient
Batman	Sacha	Smartest
Lex Luthor	Vladimir	Strongest
Wonderwoman	Jelena	
		Scariest

This leaves us with the task of placing the remaining values in each column. When we do this we get:

Costume	Person	Category best
Joker	Catherine	Most efficient
Batman	Sacha	Smartest
Lex Luthor	Vladimir	Strongest
Wonderwoman	Jelena	Powerful
Superman	Billy	Scariest

This solution does not contradict any of the basic clues given in the question. Hence, the answers are:

6. Billy ranked fifth. Option (a)
7. Billy got the scariest costume. Option (a)
8. Sacha’s costume is Batman. Option (b) is correct.
9. Option (c) is the correct order.
10. Only (IV) and (V) are not properly matched. Hence, Option (a) is correct.

Reaction Tracker to Questions 11–15: There are essentially two logical forks in this question:

The first one comes from Clue (i), according to which the highest total of vest number and time must be 13 (as the square is 169).

This could mean two scenarios:

Vest number 7 with time=6; or vest number 6 with time=7.

The two scenarios can be shown as:

Possibility 1		Possibility 2	
Vest Number	Rank	Vest Number	Rank
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	7
7	6	7	

Inside these two scenarios we need to merge the other three way fork:

The square of the least total of vest number and rank is 16 and occurs only once. It gives us 3 scenarios on the surface:

However in this scenario we can reject Vest 3 ranking 1 because then the second ranker’s vest number would exceed the winner’s vest number (Clue (iv))—as we cannot put the 2nd rank for either 1 or 2 as the total of 4 is the least sum and occurs only once.

This leaves us with 4 principal situations 1A, 1B, 2A and 2B. Let us evaluate each of these separately:

Possibility 1A (starting thought)	
Vest number	Rank
1	3
2	4/5/7
3	2/4/5/7
4	1/2/4/5/7
5	1/2/4/5/7
6	1/2/4/5
7	6

In the above situation, the total of vest number + rank has to occur thrice. There are only 3 places

where this can actually occur given the possibilities listed above. These are 2-7; 4-5 and 5-4. Hence, the following conclusions can be made:

Possibility 1A (starting thought)	
Vest number	Rank
1	3
2	7
3	2
4	5
5	4
6	1
7	6

3-2 and 6-1 get automatically selected. As for the vest number 3, only rank possibility left is 2nd rank and after than rank 1 must go to vest number 6.

If we go for a similar analysis with the other possibilities you can see that they do not work out. For instance in Possibility 1B, if we put down what is possible to be placed against vest numbers 1 and 3 respectively we get the following figure.

Possibility 1B	
Vest number	Rank
1	4/5/7
2	2
3	3/4/5/7
4	
5	
6	
7	6

From this point we know that there have to be exactly 3 totals of 9, which can only be achieved by matching 4-5; 5-4 and 6-3. Then, 3rd vest must be 7th rank but that leaves us with no rank possibility for vest 1 and also rank 1 not getting allotted anywhere. Thus, this possibility does not exist. Similarly we can reject possibilities 2A and 2B:

Possibility 2A	
Vest number	Rank
1	3

2	4/5/6
3	2/4/5/6
4	1/2/4/5/6
5	1/2/4/5/6
6	7
7	1/2/4/5/6

In the above table we need three 9s. There are 4 possibilities for the sum of vest number and rank to be 9. These are 3-6, 4-5, 5-4 and 7-2. Only 3 of these 4 have to make up 9, hence we will have to leave out one of the 4. If we leave out 3-6, 4-5 or 5-4 then vest number 7 must take Position 2 (runner up). This will contradict Clue (iv) as the winner’s vest number > the runner-ups vest number. If we leave out 7-2 and place 3-6, 4-5 and 5-4 there will be no place to put rank 2. Thus, this possibility gets rejected.

Possibility 2B also gets rejected as follows:

Possibility 2B	
Vest number	Rank
1	4/5/6
2	2
3	3/4/5/6
4	1/3/4/5/6
5	1/3/4/5/6
6	7
7	1/3/4/5/6

In the table above, there are only 3 cases of total of vest number + rank = 9. Thus, the table should become:

Possibility 2B	
Vest number	Rank
1	4/5/6 no place for 3 rd rank??
2	2
3	6
4	5
5	4

6	7
7	1

Thus, this possibility is also rejected.

The answers are:

11. Vest number 6. Option (b)
12. Vest number 3. Option (d)
13. Vest number 2. Option (d)
14. Vest number 2. Option (b)
15. Vest number 7. Option (a)
16. Ben gets a chance to eliminate (Clue a); Frank gets a chance to eliminate (Clue e); Devon gets a chance to eliminate (Clue h); Only Charlie does not get a chance to eliminate someone. Option (b) is correct.
17. Frank and Ian satisfy the condition of not being in the top four in any event. Of them Ian would not get eliminated (Clue i); Frank would get eliminated (Clue d). Option (d)
18. Garry who is getting eliminated by Clue f would not be eliminated due to this Clue.
19. Clue b does not have any usage in this question.
20. John is getting eliminated due to Clue h, which pertains to 9th rank in the event D. Also, Devon is getting eliminated due to maximum number of last ranks, which would no longer be true. Thus, Option (d) is correct.
21. If G is fifth, then A and B must be ranked 6th and 7th respectively. This can only happen if D scores the highest (as, if C is highest, then E must be 7th. Option (a)
22. The first three options are not feasible. Option (d) is the only thing that can be true.
23. Option (d) is possible.
- 24.The ordering in terms of sweetness would be L>G>R>C and*pethas* (P) have to be greater than *chamchams* (C). Thus, clearly the third statement is true.
25. Both A and C weigh more than B. However, it is not certain whether C weighs the most. Thus we choose Option (c).
26. Uncertain. Option (c).
27. We will get from the first two statements T>H>C>F. Thus Statement 3 is false if the first two statements are true.
28. False, as we get A>B>C and hence C>A is definitely false. Option (b)

Solutions to 29 to 32:

The solution table would be:

Rainfall (From Max to Min)	Location	City
130	Forest	Aurangabad
88	Valley	Mumbai

64	Mountains	Pune
54	Coast	Ahmednagar
24	Desert	Nagpur

Hence, the answers are:

- 29. Nagpur (Option d)
- 30. Aurangabad (Option a)
- 31. Ahmednagar ranked fourth and got 54 inches of rain. (Option b).
- 32. Mumbai is located in a valley (Option c).

Team Formations

Team formation questions are another question type which are commonly seen in most exams. The questions consist typically of a group of people/objects that have to be put together in teams—albeit with a set of constraints/conditions about certain people who need to be put together/ cannot be put together in a team.

The key skills involved in solving team formation questions would involve the following:

- (i) The ability to visualise the structure of the teams to be formed including the number of people/objects in each team
- (ii) The ability to order the clues in the correct order of usage (as explained in the theory of logical reasoning)
- (iii) The ability to create symbolic representations of the various clues provided so that you can bring together each of the relevant clues while creating the teams
- (iv) The ability to wait for and reach the appropriate time in the problem solving situation from where the indirect clues provided in the question can be used.

Illustrated below are the solutions to a few typical questions on team formations. We would urge you to first have a look at the questions and try to solve the same on your own before looking at the solutions.

Example 1

Directions for Questions 1 and 2: Read the information given below and answer the questions.

A director is casting a movie about twins. Selection must be made from among nine people—Amartya, Bhupesh, Caruna, Divya, Elangovan, Farly, Girish, Harish, and Isha. Amartya is Bhupesh's twin. Caruna is Divya's twin, and Elangovan is Farly's twin. Girish, Harish and Isha may each be selected only as "extras."

- Σ At least two pairs of twins must be selected.
- Σ At least as many women as men must be selected.
- Σ Amartya and Bhupesh must both be selected if either is selected.

- Σ Caruna and Divya must be selected if either is selected.
 - Σ Elangovan and Farly need not both be selected.
 - Σ At least one “extra” must be selected.
 - Σ Amartya, Bhupesh, Elangovan, Girish and Harish are men.
1. Which of the following is an acceptable cast for the movie?
 - (a) Amartya, Bhupesh, Elangovan, Farly, Isha
 - (b) Caruna, Divya, Farly, Girish, Harish, Isha
 - (c) Bhupesh, Caruna, Divya, Elangovan, Harish, Isha
 - (d) Caruna, Divya, Elangovan, Farly, Girish, Harish, Isha
 2. Which of the following people must be included in the cast?

(a) Divya	(b) Isha
(c) Farly	(d) Harish

Solution:

To solve this we will create a diagram where men will be denoted by upper case letter and women with lower case letters and we will list the extras separately to avoid confusion. Here given that Caruna and Divya must both be selected because if they were not selected then Amartya and Bhupesh or Elangovan and Farly (three of whom are men) would all be selected; as a result only two women Farly and Isha at most will be selected. However according to the constraints at least as many women as men must be selected, thus Caruna and Divya must both be selected.

$$\begin{array}{c}
 [A \ B] \quad [C \ D] \quad [E / F] \\
 G \ H \ i \quad [\geq 1] \\
 \text{women} \geq \text{MEN}
 \end{array}$$

- 1) Eliminate each options using the clues given in the information. Only option (d) suffices. Hence option (d) is the correct answer.
- 2) Caruna and Divya must both be selected. Hence option (a) is the correct answer.

Example 2 Vijayshree wants to take four courses this trimester. There are only seven courses in which she is interested: three marketing courses – Distribution, Advertising and PR; and four Finance courses— International Finance, Accounting, Corporate Finance and Financial Services. To meet college requirements she must take two marketing courses. There are some scheduling problems: International Finance overlaps both Advertising and Corporate Finance but she can choose Advertising and Corporate Finance as two different courses. Distribution is given at the same time as Accounting.

1. If Vijayshree decides she will take International Finance, what will her other three courses be?
 - (a) Distribution, PR and Advertising

- (b) Distribution, PR and Financial Services
 - (c) Distribution, PR and Accounting
 - (d) PR, Advertising and Financial Services
2. If Vijayshree takes four courses this trimester, then which of the following statement is not possible?
- I. She takes Accounting and does not take Advertising.
 - II. She takes Corporate Finance and does not take Advertising.
 - III. She takes International Finance and does not take PR.
- (a) I only
 - (b) II only
 - (c) III only
 - (d) I and III only
3. Which of the following must always be true?
- I. Vijayshree must take PR if she takes Corporate Finance.
 - II. Vijayshree must take Advertising if she takes Accounting.
 - III. Vijayshree must take Accounting if she takes Advertising.
- (a) I, II, and III
 - (b) II, and III only
 - (c) I and II only
 - (d) II only

Solution:

- (1) It can be seen that if she takes International Finance, she would not be able to take the Advertising and Corporate Finance course. This means that she has to choose Distribution and PR as her two marketing courses and because Distribution overlaps with Accounting, her second finance course must be Financial Services. Option (b) is correct.
- (2) Statement I is definitely not possible because if she takes Accounting she cannot take Distribution and she must have to take Advertising.
- Statement II is possible, while statement III can be seen to not be possible as if she takes International Finance she has to take PR as Advertising would not be available to her.
- Option (d) is correct.
- (3) Statement I is not necessarily true as if she takes Corporate Finance she can take up Distribution and Advertising and skip PR. i.e. PR is not necessary if she has taken Corporate Finance.
- Statement II is mandatorily true because if she takes Accounting, she cannot take Distribution and hence she would be forced to take up Advertising as one of her two compulsory marketing courses. Statement III is not necessarily true. Thus option (d) is correct.

Example 3

Directions for Questions 1 to 3: Answer the questions based on the following information.

At Semco, Ricardo Semlar has perfected the art of employee motivation. Due to this, his staff works 7

days a week. However, he has given them the leeway that in every week they are allowed to work for the company on any 4 days and for the remaining 3 days of the week every employee is allowed to work on his own entrepreneurial project. On a particular day, Mr. Semlar was looking closely at the functioning of 3 of his most trusted executives and found out a few facts about their weekly schedule. Each of them work for the company only 4 days a week and work on their own projects for 3 days every week.

All the three executives work together (for the company) only once in a week.

None of them works for the company for 3 consecutive days.

Amit works on his project on Tuesdays, Thursdays and Sundays.

Bimlesh works on his own project on Saturday.

Chetan does not work for the company on Fridays and Sundays.

No two executives have an own project work day on the same day more than once a week.

At least 1 person works for the company everyday of the week.

- On which day of the week do all the three executives work together?

(a) Monday

(b) Wednesday

(c) Friday

(d) Cannot be determined
- Which of the following days does Chetan work on his own project?

(a) Monday

(b) Tuesday

(c) Wednesday

(d) Thursday
- Which of the following days is surely a company working day for Bimlesh?

(a) Wednesday

(b) Friday

(c) Sunday

(d) Cannot be determined

Solution:

The following table emerges from the given conditions: (P denotes working on own project)

	Amit	Bimlesh	Chetan
Monday			
Tuesday	P		
Wednesday			P
Thursday	P		
Friday			P
Saturday		P	
Sunday	P		P

Note: Chetan’s third P is on Wednesday because it cannot be on Tuesday or Thursday (as in that case Chetan and Amit would be working on their projects together on two days of the week.) Also, Chetan’s third P cannot be on Monday in which case Chetan would be working continuously for the company for 3 days.

Thus, the answers are:

- 1. Option (a) (Monday)
- 2. Option (c) (Wednesday)
- 3. Sunday is necessarily a company working day for Bimlesh. Option (c) is correct.

Example 4 Study the following information carefully and answer the questions given below:
7 friends A, B, C, D, L, M and Z are going to a new year’s party on mobikes in Goa. Since it is late a night they do not anticipate any police presence and hence have taken only 3 bikes – an Enfield, a Honda and a TVS, with at least 2 of them sitting on each bike (hence there is triple riding on at least 1 bike). There is exactly one male on each bike. Amongst the group there are two executives, two designers and three psychologists among them.

- (i) C is a lady designer and she does not travel with the pair of sisters, A and M.
- (ii) B, a male executive, travels with only Z, a psychologist on an Enfield bike.
- (iii) D is a male designer.
- (iv) Two persons belonging to the same profession do not travel on the same bike.
- (v) A is not an executive and travels on the Honda.

- 1. What is M’s profession?
 - (a) Executive
 - (b) Psychologist
 - (c) Designer
 - (d) Data inadequate
- 2. On which bike does C travel?
 - (a) Enfield
 - (b) Honda
 - (c) TVS
 - (d) Either Honda or TVS
- 3. Which of the following represents the three psychologists?
 - (a) ZLM
 - (b) ZLA
 - (c) ZLM or ZLA
 - (d) None of these

Solution:

We start from clue (ii) and get the following table:

Enfield	Honda	TVS
B Z		
Executive		
Psychologist		

(Note we can conclude that Z is a female because there is exactly 1 male on each bike). We denote females in our figures with an underline.

We further know that A and M are sisters and C is a lady designer. Since 2 persons with the same profession cannot travel together, D and C must be traveling on different bikes. Thus, D should be clubbed with A & M. Also, since A is on a Honda, the Honda should have 3 people A, M and D.

Enfield	Honda	TVS

B Z	A M D	C L
Executive – Psychologist	?, ?, Designer	Designer, ?

From this point in the solution, we need to concentrate only on the professions of A, M and L. We also know that we are yet to identify 1 executive and 2 psycholoigsts. Further, according to the constraint of clue (iv) both A and M cannot be psychologists. Thus, L must be a psychologist. Also, since, we know that A is not an executive we can conclude that A must be a psychologist and the final table emerges as follows:

Enfield	Honda	TVS
B Z	A M D	C L
Executive – Psychologist	Psychologist, Executive, Designer	Designer, Psychologist,

The answers are:

- Executive. Option (a) is correct.
- On the TVS. Option (c) is correct.
- Z, L and A represent the three psychologists. Option (b) is correct.

Example 5

Direction for Questions 1 to 3: Study the following information carefully to answer the questions given below:

Examinations of eight papers were conducted in a week, from Monday to Saturday. The papers were: Advertising, Biology, Chemistry, Distribution, Quantitative Techniques, Finance, Marketing and Heuristics. Not more than two papers were organised in a day. Only one of the days, during Monday to Saturday, was the rest day. The paper on Distribution was held just before the Finance paper, but immediately after the Heuristics paper. It is also known that there was no rest day between any two of these three papers. The tests were split equally between the days before the rest day and the days after the rest day, i.e., tests of four papers were held before the rest day whereas four papers were held after the rest day. Thursday was not the rest day. Quantitative Techniques and Finance were held on the same day. The paper on Heuristics was not held either on Thursday or on Friday. The papers on Marketing and Biology were held just before Advertising and Chemistry respectively. The paper on Advertising was held just before the paper on Biology.

- Examinations of which papers were held on Monday?
 - Heuristics and Distribution
 - Distribution and Finance
 - Marketing and Advertising
 - Can’t be determined
- Which of the following days was the rest day?

(a) Tuesday	(b) Wednesday
(c) Thursday	(d) Can’t be determined

3. Examination(s) of which of the following papers was /were held on Friday?

I. Marketing

II. Advertising

III. Biology

IV. Chemistry

(a) Only II

(b) Only III

(c) Either II or III or both II and III

(d) Both II and III

Solution:

The thinking in this question would go as follows:

From the statements “Examinations of eight papers were conducted in a week, from Monday to Saturday. Not more than two papers were organised in a day & only one of the days, during Monday to Saturday, was the rest day.” We realise:

8 papers are conducted in 5 days with not more than 2 papers on any single day. This means that there must be exactly 3 days when 2 papers each are conducted.

Further when we read “Tests of four papers were held before the rest day whereas four papers were held after the rest day”, we realise that there must be at least 2 days before the rest day and 2 days after the rest day. This obviously means that the rest day must be either on Wednesday or on Thursday.

Also as we go further down the problem we realise: “Thursday was not the rest day.” We realise that the rest day must be on Wednesday. Thus, both Monday and Tuesday must have had 2 exams each.

From the statements: “The papers on Marketing and Biology were held just before Advertising and Chemistry respectively. The paper on Advertising was held just before the paper on Biology.” We get that **Marketing-Advertising-Biology-Chemistry** must be the order for these 4 subjects and also that there must not be any other paper between these 4 papers.

At this point we know the following structure of the respective days and the papers on each day:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2 Papers	2 Papers	REST DAY			

In the above figure we also know that between Thursday to Saturday exactly one day has 2 papers. Thus, there could be 2 papers on any one of the days viz: Thursday, Friday or Saturday.

Further using the statements “The paper on Distribution was held just before the Finance paper, but immediately after the Heuristics paper. It is also known that there was no rest day between any two of these three papers & Quantitative Techniques and Finance were held on the same day. The paper on Heuristics was not held either on Thursday or on Friday.” We get:

Heuristics-Distribution-Finance-Quantitative Techniques as one order of papers which can either be placed before the rest day or after. However, if we were to try to place these 4 papers after the

rest day, we would need to put Heuristics on Thursday which contradicts the conditions of the problem. Thus, these 4 papers can only be assigned to Monday and Tuesday (2 papers each). This also means that: **Marketing-Advertising-Biology-Chemistry** must be after the rest day.

Based on these conclusions there are 3 possible ways in which the exams can be structured (depending on which day we use for putting 2 papers after Wednesday). These are

Possibility 1:

Monday	Heuristics	Distribution
Tuesday	Finance	QT
Wednesday	REST DAY	
Thursday	Marketing	
Friday	Advertising	Biology
Saturday	Chemisty	

Possibility 2:

Monday	Heuristics	Distribution
Tuesday	Finance	QT
Wednesday	REST DAY	
Thursday	Marketing	
Friday	Advertising	
Saturday	Biology	Chemisty

Possibility 3:

Monday	Heuristics	Distribution
Tuesday	Finance	QT
Wednesday	REST DAY	
Thursday	Marketing	Advertising
Friday	Biology	
Saturday	Chemisty	

The answers can be read off from the tables (based on what is correct for each of these possibilities):

1. Heuristics and distribution are always on Monday. Option (a) is correct.
2. Wednesday is the rest day in all possibilities. Option (b) is correct.
3. It could be either Biology (possibility 3) or Advertising (possibility 2) or both (possibility 1). Option (c) is correct.

EXERCISE ON TEAM FORMATION

Directions for Questions 1 to 3:

- i. A guest house has 6 rooms A, B, C, D, E, and F. Among these A and C can accommodate two persons each; the rest can accommodate only one each.
- ii. Eight guests P, Q, R, S, T, U, W and X are to be kept in these rooms. Q, T and X are females; while the rest are males. The two sexes can't be put together in the same room. No man is willing to stay in room C or F.

- iii. P wants to be alone but does not want to stay in rooms B or D. S needs a partner but is not ready to stay with U or W. X does not want to share her room.
- Who among the following will stay in room E?
(a) U (b) W
(c) P (d) Data inadequate
 - In which of the following rooms will U stay?
(a) B (b) D
(c) A (d) B or D
 - X will stay in which of the following rooms?
(a) C (b) F
(c) B (d) Data inadequate

Directions for Questions 4 to 8:

- M, N, P, Q, S, and T are six members of a group in which there are three female members. Females work in three departments – Accounts, Administration and Personnel, and sit on three different floors – Ist, IInd, IIIrd. Persons working in the same department are not on the same floor. Two persons work on each floor.
 - No two females work in the same department or on the same floor. N and S work in the same department but not in Personnel. Q works in Administration. S and M are on the Ist and IIIrd floors respectively and work in the same department. Q, a female, does not work on the IInd floor, P, a male, works on Ist floor.
- Which of the following groups of persons are females?
(a) SQT (b) QMT
(c) QPT (d) Data inadequate
 - Which of the following pairs of persons work in Administration?
(a) QP (b) QN
(c) SP (d) Data inadequate
 - T works in which department?
(a) Accounts
(b) Administration
(c) Personnel
(d) Accounts or Personnel
 - Which of the following pairs work on the IInd floor?
(a) PT (b) SM
(c) QN (d) NT

8. If T is transferred to Accounts and S is transferred to Administration, who is to be transferred to Personnel to maintain the original distribution of females on each floor?
- (a) P (b) N
(c) Q (d) Data inadequate

Directions for Questions 9 to 13: A, B, C, D, E, F, and G are travelling in three different vehicles. There are at least two passengers in each vehicle—Maruti, Santro, Opel, and only one of them is a female. There are two engineers, two doctors and three teachers among them.

- i. C is a lady doctor and she does not travel with the pair of sisters A and F.
ii. B, a male engineer, travels with only G, a teacher in a Maruti.
iii. D is a male doctor.
iv. Two persons belonging to the same profession do not travel in the same vehicle.
v. A is not an engineer and travels in a Santro.

9. What is F's profession?

- (a) Engineer (b) Doctor
(c) Teacher (d) Data inadequate

10. In which vehicle does C travel?

- (a) Maruti (b) Santro
(c) Opel (d) Data inadequate

11. Which of the following represents the three teachers?

- (a) GEF (b) GEA
(c) GBF (d) Data inadequate

12. How many lady members are there among them?

- (a) Three (b) Four
(c) Three or four (d) Data inadequate

13. Which of the following is not correct?

- (a) E-Male-Teacher (b) B-Male-Engineer
(c) A-Female-Teacher (d) All are correct

Directions for Questions 14 to 19: Ten students— A, B, C, D, E, F, G, H, I and J are chosen to represent their college in four sports— tennis, badminton, table tennis and snooker. The badminton team has one student less than the tennis team. A, B and C are not tennis players, individually or as a group. D, E and F are not in badminton team individually or as a group. G, H and I are not in the table tennis team, individually or as a group. J is a table tennis player. None of the students is a snooker player.

14. Which of the following students could be table tennis players?

- (a) J, B & G (b) J, C & F

(c) J , D, E & F

(d) J, B, C & D

15. Of those listed, what is the largest possible number of students who could be table tennis players?

(a) 6

(b) 7

(c) 9

(d) None of these

16. If no other student except I is in the badminton team, which of the following students could be tennis players?

(a) D and H

(b) F and E

(c) E and G

(d) G and H

17. If the table tennis team has one member, who of the following must be a tennis player?

(a) A

(b) B

(c) D

(d) G

18. If G, H and C are the only students in the badminton team, which three must be the only students who are table tennis players?

(a) A, B and J

(b) A, D and J

(c) B, E and J

(d) B, F and J

19. If A and G are the only badminton players, how many students must be in the table tennis team?

(a) 2

(b) 3

(c) 5

(d) 6

20. There are ten animals— two each of lions, panthers, bison, bears and deer, in a zoo. The enclosures in the zoo are named X, Y, Z, P and Q and each enclosure is allotted to one of the following attendants: Jack, Mohan, Shalini, Suman and Rita. Two animals of different species are housed in each enclosure. A lion and a deer cannot be together. A panther cannot be with either a deer or a bison. Suman attends to animals from among bison, deer, bear and panther only. Mohan attends to a lion and panther. Jack does not attend to deer, lion or bison. X, Y and Z are allotted to Mohan, Jack and Rita respectively. X and Q enclosures have one animal of the same species. Z and P have the same pair of animals.

The animals attended by Shalini are:

(a) Bear & Bison

(b) Bison & Deer

(c) Bear & Lion

(d) Bear & Panther

21. Eight people carrying food baskets are going for a picnic on motorcycles. Their names are A, B, C, D, E, F, G and H. They have four motorcycles M1, M2, M3 and M4 among them. They also have four food baskets O, P, Q and R of different sizes and shapes and each can be carried only on motorcycles M1, M2, M3, or M4 respectively. No more than two persons can travel on a motorcycle and no more than one basket can be carried on a motorcycle. There are

two husband-wife pairs in this group of eight people and each pair will ride on a motorcycle together. C cannot travel with A or B. E cannot travel with B or F. G cannot travel with F, H or D. The husband-wife pairs must carry baskets O and P. Q is with A and P is with D. F travels on M1 and E travels on M2 motorcycles. G is with Q, and B cannot go with R.

Who is travelling with H?

(a) A	(b) B
(c) C	(d) D

22. In a “keep-fit” gymnasium class there are fifteen females enrolled in a weight-loss programme. They all have been grouped in any one of the five weight-groups—W1, W2, W3, W4 or W5. One instructor is assigned to one weight-group only. Sonali, Shalini, Shubhra and Shahira belong to the same weight-group. Sonali and Rupa are in one weight-group. Rupali and Renuka are also in one weight-group. Rupa, Radha, Renuka, Ruchika and Ritu belong to different weight-groups. Somya cannot be with Ritu, and Tara cannot be with Radha. Komal cannot be with Radha, Somya or Ritu. Shahira is in W1 and Somya is in W4 with Ruchika. Sweta and Jyotika cannot be with Rupali, but are in a weight-group with total membership of four. No weight-group can have more than five or less than one member. Amita, Babita, Chandrika, Deepika and Elina are instructors of weight-groups with membership sizes 5,4,3,2 and 1, respectively. Who is the instructor of Radha?

(a) Babita	(b) Elina
(c) Chandrika	(d) Deepika

23. A King enjoys unflinching loyalty from eight of his ministers M1 to M8, but he has to select only four to make a cabinet committee. He decides to choose these four such that each selected person shares a liking with at least one of the other three selected. The selected person must also hate at least one of the likings of any of the other three persons selected.

- (i) M1 likes fishing and smoking, but hates gambling;
- (ii) M2 likes smoking and drinking, but hates fishing;
- (iii) M3 likes gambling, but hates smoking;
- (iv) M4 likes mountaineering, but hates drinking;
- (v) M5 likes drinking, but hates smoking and mountaineering;
- (vi) M6 likes fishing, but hates smoking and mountaineering;
- (vii) M7 likes gambling and mountaineering, but hates fishing; and
- (viii) M8 likes smoking and gambling, but hates mountaineering;

Who are the four people selected by the King?

(a) M1, M2, M5, M6	(b) M3, M4, M5, M6
(c) M4, M5, M6, M8	(d) M1, M2, M4, M7

Directions for Questions 24 to 26: (Constraint Based Selection) A group of three or four has to be

selected from seven persons. Among the seven there are two women—Fiza. and Kavita, and five men—Ram, Shyam, David, Peter and Rahim. Ram would not like to be in the group if Shyam is also selected. Shyam and Rahim want to be selected together in the group. Kavita would like to be in the group only if David is also there. David, if selected, would not like Peter in the group. Ram would like to be in the group only if Peter is also there. David insists that Fiza be selected in case he is there in the group.

24. Which of the following is a feasible group of three?

- (a) David, Ram, Rahim
- (b) Peter, Shyam, Rahim
- (c) Kavita, David, Shyam
- (d) Fiza, David, Ram

25. Which of the following is a feasible group of four?

- (a) Ram, Peter, Fiza, Rahim
- (b) Shyam, Rahim, Kavita, David
- (c) Shyam, Rahim, Fiza, David
- (d) Fiza, David, Ram, Peter.

26. Which of the following statements is true?

- (a) Kavita and Ram can be part of a group of four.
- (b) A group of four can have two women.
- (c) A group of four can have all four men.
- (d) None of the above.

Directions for Questions 27 to 28: Read the information given below and answer the questions that follow.

At a secret location in Nevada, a science lab exists where four research projects ROC-I, ROC-II, ROC-III and ROC-IV are underway. The projects are assigned difficulty level L1 or L2 or L3. A total of six researchers who are given code names in order to protect their identity are—Ax, Bx, Cx, Dx, Ex and Fx—are chosen for working on the projects with the provision that for the project of difficulty level L1 only one research associate will be engaged while for the other projects two researchers will be engaged. There are, however, some constraints to be overcome before allotting the work.

- A. Ax, Bx and Dx do not work with each other.
- B. Projects ROC-II and ROC-III are of difficulty level L₂/L₃. Remaining projects are of L₁ level.
- C. Ex cannot work with anyone else.
- D. Cx and Dx cannot work together.
- E. Fx can work either with Dx or Cx only.
- F. Fx cannot be engaged in L³ level projects.
- G. Ax and Cx cannot work together.

27. Researcher Ax can be allotted which of the following projects?

- (a) ROC-I or ROC-II but not ROC-III
- (b) ROC-II or ROC-III but not ROC-IV
- (c) ROC-III or ROC-IV but not ROC-I
- (d) ROC-IV or ROC-I but not ROC-II

28. If researcher Fx is engaged neither for ROC-I nor for ROC-II, and it is also known that B works in Project III, then assignments for how many of the six researchers can be decided?

- (a) 2
- (b) 4
- (c) 3
- (d) All

Directions for Questions 29 and 30: Study the information given below and answer the questions that follow.

If Mayank goes to Singapore he makes Neha or Omar (but not both of them) also to go to Singapore. Ravi goes to Singapore only if Omar goes. Pawan goes to Singapore if Neha or Omar goes. Shawn goes to Singapore only if Neha goes. Varun goes to Singapore only if Ravi or Shawn goes. If Pawan goes to Singapore, he makes Tanvi or Unni or both to accompany him. Tanvi goes to Singapore if Shawn goes. Unni goes to Singapore only if Ravi goes.

29. If Mayank has gone to Singapore, who of the following may have also gone to Singapore?

- A. Ravi and Unni
- B. Shawn and Tanvi
- C. Pawan

- (a) A, B and C
- (b) A and C or B and C but not both
- (c) A only
- (d) B only

30. If Varun has gone to Singapore, who of the following must have also gone?

- (a) Both Ravi and Shawn
- (b) Both Neha and Omar
- (c) Either Omar or Neha
- (d) Ravi

Directions for Questions 31 and 32: Read the following information carefully and answer the questions given below.

Amir, Bikram, Charlie, David, Emraan, Fahim and Gaurav are seven students in a class. They are sitting on three benches— Mahogany, Oak and Maple in such a way that there is at least two of them on each bench and there is at least one girl on each bench. Charlie, a girl student, does not sit with Amir, Emraan and David. Fahim, a boy student, sits only with Bikram. Amir sits with his best friend on bench Mahogany. Gaurav sits on bench Maple. Emraan is the brother of Charlie.

31. How many girl students are there?
- (a) 3 (b) 4
(c) 3 or 4 (d) None of these
32. Which of the following is a group of girls?
- (a) Bikram, Amir and Charlie
(b) Bikram, Fahim and Charlie
(c) Charlie, David and Fahim
(d) Bikram, Charlie and David

Directions for Questions 33 to 35: Study the following information carefully and answer the questions given below:

Geetika, Deep, Niharika, Shwetabh, Akansha, Aishwarya and Aparajita are travelling in three vehicles. There are at least two passengers in each vehicle—Maruti, Santro and Octavia and only one of them is a male. There are two engineers, two doctors and three teachers among them.

- (i) Niharika is a lady doctor and she does not travel with the pair of sister, Geetika and Aishwarya.
(ii) Deep, a male engineer, travels with only Aparajita, a teacher in a Maruti.
(iii) Shwetabh is a male doctor.
(iv) Two persons belonging to the same profession do not travel in the same vehicle.
(v) Geetika is not an engineer and travels in vehicle Santro.

33. What is Aishwarya's profession?
- (a) Engineer (b) Teacher
(c) Doctor (d) Data inadequate
34. In which vehicle does Niharika travel?
- (a) Maruti (b) Santro
(c) Octavia (d) Santro or Octavia
35. Which of the following represents the three teachers?
- (a) Aparajita, Akansha and Aishwarya
(b) Aparajita, Akansha and Geetika
(c) Aparajita, Akansha and Aishwarya or Aparajita, Akansha and Geetika
(d) Data inadequate

Directions for Questions 36 and 37: Study the following information carefully and answer the questions given below:

- I. G, H, I, J, K, L, M and N are eight students in a class. Three of them play cricket and badminton each and two of them play hockey. Each one of them has a different height.

- II. The tallest does not play hockey and the shortest does not play cricket.
- III. L is taller than G and J but shorter than N and H. K, who does not play cricket, is taller than F and is second to the tallest. M is shorter than J but taller than G.
- IV. N, who is the fourth from the top, plays badminton with J.
- V. M does not play either cricket or hockey. H does not play hockey.
36. Which of the following pairs of students plays hockey?
- (a) K & L (b) N & K
- (c) N & L (d) None of these
37. What is L's position from the top when they are arranged in descending order of their height?
- (a) Third (b) Fifth
- (c) Fourth (d) None of these

Directions for Questions 38 and 39: Study the following information carefully and answer the questions given below:

Bali, Chinkara, Dabang, Fateh, Giri, Himesh and Jeev are seven students studying in three colleges: IIM A, IIM B and IIM R. There are three boys and four girls. There are at least one boy and one girl in each college. Three of them are in HR discipline and two each in Finance and Marketing. Bali and her sister Giri are in Marketing but in different colleges. Fateh studies Finance in college IIM B and he does not study with either Jeev or Chinkara. Dabang is not in HR and he studies in college IIM A only with Bali. All the three from HR do not study in the same college. Himesh studies in the same college with her friend Giri.

38. In which college do only HR students study?
- (a) None (b) IIM B
- (c) IIM R (d) IIM A
39. If Chinkara and Bali interchange their colleges satisfying all other conditions, which of the following will definitely represent the girls?
- (a) Bali, Chinkara, Himesh and Dabang
- (b) Bali, Chinkara, Himesh and Giri
- (c) Bali, Fateh, Himesh and Giri
- (d) Dabang, Chinkara, Himesh and Fateh

Directions for Questions 40 and 41: Study the following information carefully and answer the questions given below:

Seven specialist persons Bebe, Meme, Keke, Pepe, Dede, Fefe and Hehe visit an office on four days — Tuesday, Wednesday, Friday and Saturday, in a week. At least one person but not more than two persons visit the office on each of these days. Each of them is a specialist in different fields— Paramedic, Business, Engineering, Genetics, Biometrics, Defense and Biotech.

- (i) Pepe visits on Friday with a specialist in Defence.

- (ii) The Engineer does not visit on Saturday nor with Dede and Hehe.
- (iii) The Biotech specialist Fefe visits alone on Tuesday.
- (iv) Meme visits on Wednesday and he is not engineer.
- (v) Keke visits on Wednesday. Hehe is not a specialist in Defence.
- (vi) The engineer visits with the paramedic specialist.
- (vii) The genetics specialist visits on Friday.
- (viii) Bebe is neither Business specialist nor a specialist in Defence.

40. What is the speciality of Bebe?

- (a) Biometrics
- (b) Paramedics
- (c) Engineer
- (d) Data inadequate

41. On which day of the week does Dede visit?

- (a) Wednesday
- (b) Saturday
- (c) Wednesday or Saturday
- (d) Friday

Directions for Question 42: Study the information and answer the question.

Alexis, Benny, Carena and Davis—four executives are to be sent to four countries—Afghanistan, Pakistan, Japan and China to head the company's operations there, not necessarily in that order. Four assistants—Dave, Catty, Billy and Arnold, are also to be sent, one to each country. Following facts are known:

- A. Alexis does not like Billy and Dave.
- B. Dave and Arnold are not to be considered for Pakistan.
- C. Billy and Catty are not to be considered for Afghanistan.
- D. Benny would not go to Pakistan or Japan.
- E. Davis loves to work with Catty.
- F. China operations would not be headed by someone whose name ends in 's'.
- G. Arnold and Catty would not go to China.
- H. Benny has excelled in working with Dave earlier and hence would like him as his assistant.
- I. Davis has built up good contacts in Japan and is considered a specialist for that country. (Sure posting is expected.)

Which of the following postings is possible?

- (a) Afghanistan-Davis-Catty
- (b) Pakistan-Carena-Billy
- (c) China-Benny-Billy
- (d) Pakistan-Alexis-Catty

Answer Key

1. (c)	2. (d)	3. (b)	4. (a)
5. (d)	6. (c)	7. (d)	8. (c)
9. (a)	10. (c)	11. (b)	12. (b)
13. (d)	14. (b)	15. (b)	16. (d)
17. (c)	18. (a)	19. (c)	20. (c)
21. (c)	22. (b)	23. (d)	24. (b)
25. (c)	26. (d)	27. (d)	28. (c)
29. (b)	30. (c)	31. (c)	32. (d)
33. (a)	34. (c)	35. (b)	36. (d)
37. (b)	38. (d)	39. (b)	40. (a)
41. (d)	42. (b)		

Solutions

Questions 1 to 3

Initial information:

A (2)

B (1)

C (2)

D (1)

E (1)

F (1)

Also, P, Q, R, S, T, U, W, X (Underlined shows female). From Clue 2, Room C (2 people) and Room F (1 person) should be women's rooms as men cannot be placed there. From Clue 3—P must be in E. S must be in A (where U and W cannot be). Thus S must be sharing his room with R. Also U and W must be in some random order in Rooms B or D. Also, X must be in Room F as she is a female and wants a single room.

Collating all this we get:

A (2) S, R

B (1)

C (2) Q, T

D (1)

E (1) P

F (1) X

Hence, the answers are:

1. P (c)
2. B or D (d)
3. F (b)

Questions 4 to 8

From the first clue we know that:

Six people M, N, P, Q, S & T

3 departments for females: Accounts, Admin and Personnel.

3 floors (2 people each)

		III
		II
		I

Using the direct information in clue 2 we get:

M	Q-	III
		II
S	P +	I

Note: (– Denotes Female and + denotes male)

Since P is a male (denoted by ‘+’ in the figure) S must be a female (Since no two females work in the same department or on the same floor).

If S is female, M must be male (since they are in the same department).

Also, since N and S are in the same department, N is also a male. This gives us the final figures us:

M +	Q -	III
N +	T –	II
S -	P +	I

Also, S, M and N work in either Accounts or Administration. Q—Administration. At this stage we can answer the questions:

4. S, Q, T (a)

For 5. data is inadequate since we just know that Q works in Admin, but we do not know who else works in Admin (and whether someone works in Admin or not).

Hence (d).

For 6. Since Q is in Admin, S must be in accounts (as she cannot be in personnel). Thus, T is in Personnel.

Hence (c).

7. N, T (d)
8. Q needs to move to Personnel to have the three women in three different departments.

Questions 9 to 13

The following table will emerge out of the given clues:

Vehicle	Profession	Profession
Maruti	B(+)	Engineer
	G-	Teacher
Santro	A-	Teacher
	F-	Engineer
	D+	Doctor
Opel	C-	Doctor
	E+	Teacher

Since C and D are doctors and A is not an engineer, hence, A is a teacher.

Since A travels in a Santro, C will travel in an Opel. Also, A and F will be together. Given A and F are pair of sisters, both are females.

In a Maruti, only two persons B & G travel, so G is a female. Two persons belonging to the same profession do not travel in the same vehicle, so D travels in a Santro. There are two doctors, two engineers and three teachers and persons of the same profession do not travel in the same vehicle, so F is an engineer. And E is a male teacher.

The answers are:

9. (a)
10. (c)
11. (b)
12. (b)
13. (d)

Questions 14 to 19

The following table will emerge out of the given clues:

	Tennis	Badminton	Table tennis
A	×	.	.
B	×	.	.
C	×	.	.
D	.	×	.
E	.	×	.
F	.	×	.
G	.	.	×
H	.	.	×
I	.	.	×
J	×	×	
Total	N	N-1	

14. (b) Looking at the options, the only possible solution is option (b) (as Table Tennis should be an odd number of people as Tennis + Badminton is $2n-1$)
15. (b) If Table Tennis players are 7 in number then,
 $n + n - 1 = 3$.
 $2n = 4$.
 $n = 2$. This is possible.
16. (d) Going through options we find that the only possibility is G and H as we would need 7 people to be Table Tennis players in such a case.
17. (c) If the Table-Tennis team has just one member J, then the Tennis team will surely have D, E and F as players.
18. (a) A, B and J would then be definitely Table Tennis players.
19. (c) If the Badminton team has 2 players, then the Tennis team will have 3 players. The remaining players will be in the Table-Tennis team.
20. (c)
21. (c)
22. (b)
23. (d)
24. (b)
25. (c)
26. (d)

Questions 27 to 28

Refer to the clues given to us in the information, the best way to solve this question is to tabulate as well as comprehend the direct and indirect clues given to us. The first clue given to us is that L_1 difficulty projects will have single researchers and other difficulty level will have two researchers. Now it is given that ROC II and ROC III are L_2 and L_3 respectively. Thus, ROC I and ROC IV are L_1 level. Direct clues given to us point that Ex can be assigned only L_1 projects which are ROC I and ROC IV. Next set of clues given to us says that Ax cannot work with Bx, Cx, Dx and Fx. Thus, A will also be assigned to project requiring a single researcher hence either ROC I or ROC IV. Now since Fx cannot be assigned to L_3 level so he must have been assigned to ROC II and he can work with either Dx or Cx, but Fx will work with Dx since Bx cannot work with Dx. Now Bx will be assigned to the remaining L_3 project i.e. ROC III and Bx has the option of working with Cx.

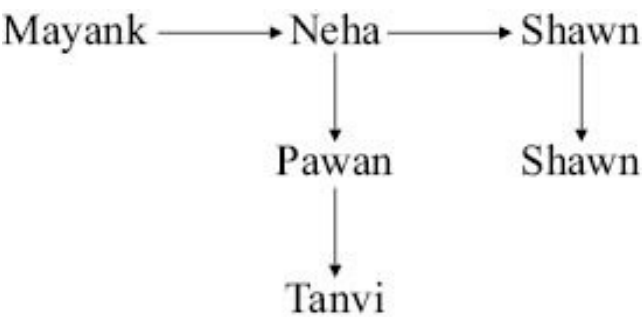
	L_1	L_2	L_3	L_1
	ROC I	ROC II	ROC III	ROC IV
Ax	X/√	X	X	√/X
Bx	X	X	√	X
Cx	X	X	√	X
Dx	X	√	X	X
Ex	√/X	X	X	X/√

27. Hence Option (d) is the correct answer.
28. If Fx can neither work in ROC I and ROC II then we become uncertain about the project assignment for each of Ax, Ex and Fx.
- Hence Option (c) is the correct answer.

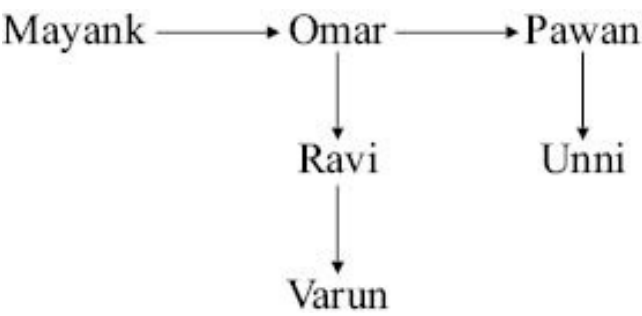
Questions 29 and 30

For this question, let us form a tree since there are separate events related to going of Neha and Omar with Mayank . There will be two scenarios that we need to analyse which is graspable from the very first line of the information given, i.e., if Mayank goes to Singapore he takes with him either Neha or Omar.

- i) If Neha goes then Pawan goes. Shawn will go with Neha only. Tanvi will go if Pawan goes and same condition goes for Varun who goes to Singapore if Shawn accompanies him.



- ii) If Omar goes then Ravi goes with him, and Pawan also will go with Omar. Varun will accompany Ravi and Unni will accompany Pawan.



29. Hence Option (b) is the correct answer.
30. Look at the trees, Varun goes due to either Neha and Omar who go with either Shawn or Ravi
- Hence Option (c) is the correct answer.

Questions 31 and 32

We have been given that Amir and Gaurav sit on benches Mahogany and Maple. Now since Fahim is a boy and sits with only Bikram, this implies that Bikram is a female. (This conclusion was made on the grounds that there is at least one girl on each bench). Fahim and Bikram sit on the Oak bench.

On the basis of above information we get:

Mahogany:	Amir	—
Oak:	Fahim(boy)	Bikram(female)
Maple:	Gaurav	—

Now since Charlie is a girl student and she does not sit with Amir, Emraan and David, it implies that Charlie sits on Maple bench because on Oak bench only two persons can be seated. By elimination of clues, Emraan and David sit on Mahogany bench. Now see the clue, “Amir sits with his friend” this means that Amir is male. Again Emraan is the brother of Charlie implies that Emraan is a male. By elimination David is a female. But sex of Gaurav is still unknown.

Thus the information obtained above can be summarised as follows:

Mahogany:	Amir(boy)	David(female)	Emraan(boy)
Oak:	Fahim(boy)	Bikram(female)	
Maple:	Gaurav	Charlie(female)	

- 31. David, Bikram and Charlie are girls. Possibility of fourth girl still exists because sex of Gaurav is unknown. Hence Option (c) is the correct answer.
- 32. Option (d) is the correct answer.

Questions 33 to 35

If there are at least two passengers in each vehicle and one of them is a male then, in the group there are at least three males. Among them Niharika is a female and she is a doctor. Geetika and Aishwarya are also females. From the second clue we get Aparajita is a teacher. Deep is a male and he is an engineer. He travels with only Aparajita, which means Aparajita is a female. And both of them travel in Maruti. From the third clue Shweta is a male and he is a doctor. From fifth clue Geetika is not an engineer and she cannot be a doctor because there can be only two doctors (Niharika and Shweta). Hence, Geetika is a teacher and she travels in Santro. So there are four females Niharika, Geetika, Aishwarya and Aparajita. Hence the remaining persons will be male because in each vehicle there has to be at least one male. Hence Akansha is a male and Shweta and Akansha will occupy seats in two different cars (Santro and Octavia) because in Maruti, Deep travels only with Aparajita. Again Niharika can travel neither with Shweta nor with Geetika and Aishwarya. Thus we have the final arrangement as follows:

Person	Profession	Vehicle	Sex
Deep	Engineer	Maruti	M
Aparajita	Teacher	Maruti	F
Geetika	Teacher	Santro	F
Shweta	Doctor	Santro	M
Aishwarya	Engineer	Santro	F
Akansha	Teacher	Octavia	M
Niharika	Doctor	Octavia	F

Now we can answer the questions as follows:

- 33. Option (a) is the correct answer.
- 34. Option (c) is the correct answer.
- 35. Option (b) is the correct answer.

Questions 36 and 37

From the clues given we can directly arrange the persons according to their heights.

I>K>H>N>L>J>M>G

Now let us arrange the persons to their games that they play.

Persons	Cricket	Badminton	Hockey
G	X	X	√
H	√	X	X
I	√	X	X
J	X	√	X
K	X	X	√
L	√	X	X
M	X	√	X
N	X	√	X

Now we can answer the questions.

36. Option (d) is the correct answer.

37. Option (b) is the correct answer.

Questions 38 and 39

Let us decode the clues to clear the picture and sequence all the events that are given in the information. We have been given that Bali and Giri are in Marketing, Fateh in Finance and Dabang is not in HR. This means that Dabang is in Finance. By the process of elimination, remaining Chinkara, Jeev and Himesh are in HR.

Discipline	Students
Marketing	Bali and Giri
Finance	Fateh and Dabang
HR	Chinkara, Jeev and Himesh

Now to arrange students with their respective colleges is the next task. We have been given Dabang who is a male student studies in IIM R only with Bali. This means that in IIM R only two students study and Bali is a female since at least one boy and one girl study in a college. Now we have been given Fateh who is a male student studies in IIM B but not with either Jeev or Chinkara. This means that Jeev and Chinkara study at IIM A. Also we have been given that Bali's sister Giri and Himesh who is a female, study in the same college. This college cannot be IIM A because then there will be only a single student in IIM B. Hence Himesh and Giri study at IIM B. Still we do not know about the sex of Jeev and Chinkara.

College	Students
IIM A	Jeev and Chinkara
IIM B	Fateh (Male), Himesh (Female) and Giri (Female)
IIM R	Dabang (Male) and B (Female)

Now we can answer the questions.

38. The students who study HR are Chinkara, Jeev and Himesh. Among the three Chinkara and

Jeev study at IIM A. Hence Option (d) is the correct answer.

39. If Chinkara and Bali interchange their colleges satisfying all other conditions it implies that Chinkara is a female and Jeev is a male. Thus the group consists of Chinkara, Bali, Giri and Himesh. Hence Option (b) is the correct answer.

Questions 40–41

This question is a classic example of primary and secondary clues being provided in the information. To solve this set one must be able to analyse all the possibilities given in the clues to derive conclusive data arranged in an appropriate manner according to the given conditions.

Let us solve the problem. From clue one we get that the two persons who visit on Friday are Pepe and the person who visits with Pepe is a Defence specialist. Now from clue three Fefe is a Biotech specialist and he visits alone on Tuesday. Also from clue seven we get that the specialist in Genetics visits on Friday. This means that Pepe is a Specialist in genetics.

Moving onto clues four and five we get that Meme and Keke visit on Wednesday and from clue six the engineer visits with Paramedics. Thus they visit either on a Wednesday or on a Saturday. Again, from clue two the engineer does not visit on Saturday. Thus, engineer and paramedics visit on Wednesday. Now using clue four we get that Meme is Paramedics and Keke is the engineer. Again from clue five we get that Hehe is not a defence specialist and Hehe does not visit on Friday. Hence Hehe visits on Saturdays. Similarly from clue eight we get that Bebe also visits on Saturday.

The only person left to analyse is Dede who is the specialist in defence. Also since Bebe is not a businessman, Hehe is a businessman and Bebe is a specialist in Biometrics.

Now we can summarise our analysis in a table:

Tuesday	Fefe (Biotech)
Wednesday	Meme (Paramedic), Keke (Engineer)
Friday	Pepe (Genetics), Dede (Defence)
Saturday	Hehe (Business), Bebe (Biometrics)

Now we can answer the questions:

40. Option (a) is the correct answer.
41. Option (d) is the correct answer.
42. To solve the question let's look into the clues given and try to pair assistants with bosses and respective countries. For this, one must start reacting to the clue that gives a clear picture of the relationship such as the clue of Davis and Catty working together. China operations would not be headed by a person whose name ends in 's'. Let us tabulate the information in the clues and draw a clear picture of the scenario.

	Alexis	Benny	Carena	Davis
	Arnold	Dave	Billy	Catty
Afghanistan	√	X	X	X
Pakistan	X	X	√	X

Japan	X	X	X	√
China	X	√	X	X

42. Hence Option (b) is the correct answer.

Quantitative Reasoning

Quantitative reasoning, as the name itself suggests, is reasoning involving numbers and numerical logic. Quantitative reasoning questions are common in all kinds of aptitude exams and require the student to work out numerical relationships as defined by the parameters in the problem.

The key skills involved in solving quantitative reasoning questions are the following:

- (i) The ability to understand the specific quantitative logic being utilised inside the questions
- (ii) The ability to order the clues in the correct order of usage (as explained in the theory of logical reasoning)
- (iii) The ability to understand basic mathematical concepts like percentages, averages, ratios, multiplications, etc.
- (iv) The ability to create symbolic representations of the various clues provided so that you can bring together each of the relevant clues while creating the teams
- (v) The ability to wait for and reach the appropriate time in the problem solving situation from where the indirect clues provided in the question can be used.

Illustrated below are the solutions to a few typical questions on quantitative reasoning. We would urge you to first have a look at the questions and try to solve the same on your own before looking at the solutions.

Example 1 The classic quantitative reasoning question:

A man would like to take a new health insurance. An officer taking care of these matters says to the man, "Please tell me how many children you have." The man answers, "I have three of them." The officer, "What are the ages of your children?" The man answers, "The product of the ages is equal to 36." The officer replies, "This is not enough information Sir!"; the man replied, "Sorry that I was a little bit unclear, but the sum of the ages is equal to the number of shops in front of your office." The officer: "This still isn't enough information Sir!"; The man replies, "My oldest child loves chocolate." The officer: "Thanks for your cooperation, I now know the ages." Are you as smart as the officer? Then give the sum of the ages of the children.

3. 36*

4. 38

Solution:

The product of the ages is 36*. Using this one can make the following combination of ages:

1, 36, 1 sum = 38

1, 18, 2 sum = 22

1, 12, 3 sum = 16

1, 9, 4 sum = 14

1, 6, 6 sum = 13

2, 9, 2 sum = 13

2, 6, 3 sum = 11

3, 3, 4 sum = 10

After the man had said that the product of the ages is equal to 36, the officer didn't have enough information. Then he was told that the sum is equal to number of shops in front of the office. He replied by saying that this still isn't enough information. So the sum of the ages should be 13, because otherwise he would have known the ages immediately. The last statement is that that the oldest child loves chocolate. So there is an oldest child. Hence the officer concludes that the ages of the children are 2, 2 and 9 years.

Hence option (3) is the correct answer.

Example 2 Early one Monday morning, four snails—Aman, Bubbly, Charu and Devi, set off together down the garden path. Aman and Bubbly kept the same steady pace, slithering only 8 meters by the time Charu and Devi had already reached the azalea.

Charu was winded and had to stop for an hour to rest. Although Devi was tired, too, she pressed on, but reduced her pace to be the same as Aman's and Bubbly's.

Charu started off again just as Aman and Bubbly got even with her. She raced off at her original pace. Aman promptly sped up to the same speed as Charu and kept even with her. Bubbly just kept going at her original pace.

When Aman reached the end of the path, she was 1 meter ahead of Bubbly, but she was a half hour later than Devi was.

How many meters long was the path?

1. 10

2. 15

3. 8

4. None of these

Solution:

A few things are evident from the current situation:

Deduction i) Since Charu rests for 1 hour before Aman and Bubbly reach the azalea, it is clear that Devi would be exactly 1 hour ahead of Bubbly when she reaches the end point.

Deduction ii) Since Devi has already reached half an hour ago when Aman and Charu reach, Bubbly must be only half an hour from her destination. Since, Bubbly is 1 meter away from the destination, she would cover this 1 meter in 30 minutes. Thus, Bubbly's speed must be 2 m/hr. This would be the

slower of the two speeds.

This would also be the speed of Bubbly and Aman for the first 8 meters.

Deduction iii) Since, Bubbly and Aman take 4 hours to reach 8 meters, in 1 hour more (when Charu rests) they will cover 2 meters more. Thus, the azalea is at a distance of 10 meters from the starting point.

Deduction iv) The 10 meter distance to the azalea is covered in 4 hours by Charu and Devi. Thus, the faster speed would be 2.5 m/hr.

Deduction v) After the azalea, when Aman and Charu start moving at 2.5 m/hr, Bubbly would be moving at 2 m/hr. When Aman and Charu reach the end, Bubbly is 1 meter behind. This gap can only be created in a 2 hour journey.

Thus, the distance from the azalea to the end point is 5 meter. Total distance is $10 + 5 = 15$ meters.

Example 3 Dhiman was admiring the output of her new program to generate random number. She had printed out the first ten numbers of the results. She soon noticed something interesting. Each of the 10 numbers had exactly one digit, in the proper placement, of the 5 digit code she used to open her car door without a key.

In the first number 14073, for example, Dhiman’s car code could not be 34170 (two digits correctly placed) or 92365 (none).

Find Dhiman’s car entry code from these first 10 randomly generated numbers: 14073, 79588, 05892, 84771, 63136, 42936, 37145, 50811, 98174 and 29402?

1. 05892

2. 63136

3. 42936

4. None of these

Solution:

In the given grid of 10 five digit numbers, since every number has exactly 1 digit matched correctly with the correct code, there must be exactly 10 instances of correct code matches amongst the 50 possible instances (10x5).

If we were to look at the first digit it is clear that the first digit has 10 different values in the ten number. Thus, only 1 number can be correctly matched for the first digit’s value.

The other 4 places in the 5 digit number must match 9 more times for the above grid to be correct. This can be principally done in 2 ways:

First way: 3+3+2+1 OR Second way: 2+2+2+3

If we were to observe the numbers the following deductions would come up:

First place	Second place	Third place	Fourth place	Fifth place
Each digit (from 0 to 9) happens only once	4 & 9 occur twice	1 occurs thrice & 8 occurs twice	7 occurs thrice & 3 occurs twice	1,2 & 6 occur twice each
	5,3,2,7,0 & 8 occur once each	0,5,7,9,8 occur once	8,9,4,1 & 0 occur once each	5,4,3 & 8 occur once each

Looking at the number 98174, it is clear that both 1 & 7 cannot occur in the third and fourth place

digits as then the number 98174 would have 2 numbers matched with the code.

Thus, the structure 1+2+3+3+1 or indeed 1+1+3+3+2 is ruled out (i.e., the use of two triplicate matches is ruled out).

Thus, the 10 matches between the code and the 10 random numbers must be in one of the following structures:

	First place	Second place	Third place	Fourth place	Fifth place
Number of digits matched with the code	1	2	3	2	2
Number of digits matched with the code	1	2	2	3	2

Thus, the number would be either xx13x or xx87x. The first possibility is rejected because 63136 contains both 1 & 3 in the third and fourth places of the number. Thus, the number must be of the form xx87x. From this point thinking about the second place digit gives us that the second place has to be occupied by 9 (as only 4 & 9 give us 2 matches with the code & amongst this 4 cannot be taken for the second place because if the number is x487x then the number 84771 contradicts the basic condition of the problem.)

Thus, the number must be x987x.

Thinking of the last digit— this digit must be either 1, 2 or 6. It cannot be 1 because of the presence of 84771 in the ten number. It cannot be 2 because the number 29402 would have 2 digits in the correct place. Hence, it must be 6. Thus, the number becomes x9876.

Thinking of the first digit, it has to be 3, because it is only the number 37145 which lacks a single digit matching with the 2nd to 5th digit of the code x9876. Thus, the code is 39876.

Example 4 Abe, Buddy, Carmen, Dennis and Earl all live on Pine Street which has house numbers from 10 to 111, both inclusive. Two of them live in the same house. The others all live in different houses. They all have made remarks about where they live, but not all the remarks are true.

Abe said, “My house number is a factor of Buddy’s house number. Earl’s house number is 10 greater than Dennis.”

Buddy said, “My house number is greater than 70. Abe’s house number is greater than 30.”

Carmen said, “My house number is both a cube and a square. Dennis’s house number is greater than 50.”

Dennis said, “My house number is a square. Buddy’s house number is a cube.”

Earl said, “My house number is twice Buddy’s.”

But who’s telling the truth? It turns out that all statements made by people living in houses with numbers greater than 50 were false. All the other statements were true.

Can you tell the house number of Earl?

1. 49
2. 16
3. 59
4. None of these

Solution:

In order to solve this question you need to look at the options for Earl’s house number. Option 1

cannot be true since if Earl’s house number is 49, he must be speaking the truth – but his statement cannot be true. If we take Earl’s house number as 16 (Option 2), then Buddy must be 8 which is against the problem’s basic condition that all house numbers are between 10 to 111.

If we go with Option 3—59, then if Abe is true then Dennis must be 49. Hence, Dennis’s statements must be true. So Buddy’s house number would be a cube. There are only 2 perfect cubes between 10 and 111— viz 27 and 64. If Buddy’s house number is 27, then he must be speaking the truth—which is not true if we look at the statement of the problem. Thus, Buddy must be 64 and Abe’s house number must be less than 30 – only factor of 64 less than 30 and greater than 10 is 16.

At this time we have the grid as:

Abe	16
Buddy	64
Earl	59
Dennis	49

We just need to place Carmen in this grid. Looking at Carmen’s statement and looking at the numbers available below 50, the two numbers (16 and 49) do not satisfy the condition that the room number is both a square and a cube. Hence, Carmen must be lying and the possible values of Carmen is 59 and 64. If we were to place Carmen at 64, then Carmen’s first statement becomes true— an internal contradiction. Thus, Carmen must be at 59. The final arrangements of house numbers are:

Abe	16
Buddy	64
Carmen and Earl	59
Dennis	49

Example 5 During a game of five card draw poker, played with a standard deck, you are dealt a hand with the following characteristics:

- It contains no aces or face cards.
- No two cards have the same value.
- All four suits are present.
- The total value of the odd cards equals the total value of the even cards.
- There are no three card straights.
- The total value of the black cards is 10.
- The total value of the hearts is 14.
- The card with the lowest value is a spade.

Exactly what are the five cards in your hand?

1. 2 of spades, 5 and 9 of diamonds, 4 of spades and 8 of clubs
2. 2 of diamonds, 5 and 9 of spades, 4 of hearts and 8 of clubs
3. 2 of clubs, 5 and 9 of hearts, 4 of diamonds and 8 of spades

4. 2 of spades, 5 and 9 of hearts, 4 of diamonds, 8 of clubs

Solution:

Deduction i) Since there are no aces or face cards, we only have 2, 3, 4, 5, 6, 7, 8, 9 or 10 as the value of the cards.

Deduction ii) Since total of odd = total of evens and the minimum even total is 12 ($2 + 4 + 6$), there must be 2 odds and 3 evens. Only then can the two odds add up to an even total and be equal to the total of 3 even cards.

Deduction iii) There are 2 cards of 1 suit and 1 card each of the other 3 suits. The two cards belonging to 1 suit must be hearts because there is no other way for the hearts to total up to 14.

Deduction iv) There are 3 cases:

- If the sum of the evens is 12, the odds would be 5 and 7 and the evens would be 2, 4, 6. This cannot happen because in such a case 2 cards would not add up to 14— which is the requirement for the 2 hearts.
- If the sum of the evens is 14, the odds would be 5 and 9 and the evens would be 2, 4, 8. This can happen if we put the hearts as 5 and 9 and 2 goes to spades, and since the total of the blacks is 10, clubs must be the 8 of clubs and 4 would be the 4 of diamonds.
- If the sum of the evens is 16, the evens should be 2, 4 and 10; the odds must be 7 and 9. But this is not possible because if we take the two hearts to total 14, it is not possible.

Thus, the solution is: 2 of spades, 5 and 9 of hearts, 4 of diamonds, 8 of clubs

Option 4 is correct.

EXERCISE ON QUANTITATIVE REASONING

Directions for Questions 1 to 5: A quiz competition was organised in a school and the performance of students was recorded on piece of paper with ink. But somehow some water fell on the paper and the information remained incomplete.

However the scorer has same clues which are:

Average	Good	Excellent	Total
Male		12	
Female			36
Total	33		

- Half the students were either excellent or good.
 - 40% of the students were females.
 - One-third of the males students were average.
- How many students are both female and excellent?
 - 0
 - 8
 - 16
 - None of these
 - What proportion of good students are male?

- (a) 0.73 (b) 0
(c) 0.4 (d) None of these
3. What proportion of female students are good?
(a) 0.25 (b) 0
(c) 0.5 (d) None of these
4. How many students are both male and good?
(a) 16 (b) 24
(c) 27 (d) None of these
5. Among average students, what is the ratio of males to females?
(a) 1:3 (b) 2:3
(c) 3:2 (d) None of these

Directions for Questions 6 to 10: A, B, C and D are four friends living together in a flat and they have an agreement that whatever edible comes they will share equally among themselves. One day A's uncle came to him and gave him a box of laddoos. Since no one was around, A divided the laddoos in four equal parts and ate his share after which he put the rest in the box. As he was closing the box, B walked in, took the Box from A & divided the laddoos in 4 equal parts & A & B took one part each and ate it. Suddenly C appeared and snatched the box. He again divided the laddoos in four equal parts, the three of them ate one part each and kept the remaining laddoos in the box. Later when D came he again divided the laddoos in four equal parts and all four ate their respective share. In total D ate 3 laddoos.

6. How many laddoos, in total did C eat?
(a) 12 (b) 15
(c) 39 (d) None of these
7. How many laddoos, in total did B eat?
(a) 24 (b) 15
(c) 39 (d) None of these
8. How many laddoos, in total did A eat?
(a) 56 (b) 68
(c) 71 (d) None of these
9. How many laddoos were given to A by his Uncle?
(a) 128 (b) 125
(c) 113 (d) None of these
10. How many laddoos did A eat the first time?
(a) 32 (b) 24

(c) 15

(d) None of these

Directions for Questions 11 to 14: Rajeev planted some plants in his lawn but in certain fixed pattern:

- i. In most of the rows there are neither Roses nor Marigolds.
- ii. There are two more rows of Orchids than Tulips and two more rows of Roses than Orchids.
- iii. There are four more rows of Roses than Tulips.
- iv. There aren't as many rows of Lilly as Fireball.
- v. There is one less Marigold row than Rose.
- vi. There is just one row of Tulips.
- vii. The maximum number of rows he planted is six.

11. How many rows of rose did he planted?

(a) Two	(b) Five
(c) Four	(d) Cannot be determined

12. Which of the above information is redundant and can be dispensed with?

(a) (i)	(b) (iii)
(c) (i) and (iii) both	(d) All are necessary

13. What is the sum of the rows of Orchids and Marigold he planted?

(a) Three	(b) Nine
(c) Seven	(d) Cannot be determined

14. How many rows of fireball did he plant?

(a) Two	(b) Six
(c) Two or Six	(d) Data inadequate

Directions for Questions 15 to 20: In a class of 540 students, for every 9 girls there are 11 boys. The weight of students varies from 40 to 50 kg. There are as many 44 kg girls as there are 46 kg boys and as many 40 kg boys as 50 kg girls. The number of 50 kg boys is 35 more than that of 44 kg girls while there are as many 44 kg boys as 46 kg girls. The ratio of 40 kg boys and girls is 4:3 while that of 50 kg girls and boys is 1:3.

15. How many boys weigh 40 kg?

(a) 22	(b) 24
(c) 28	(d) None of these

16. How many girls weigh 44 kg?

(a) 37	(b) 36
(c) 39	(d) None of these

17. How many girls weight 46 kg?

- (a) 165 (b) 164
(c) 146 (d) None of these
18. The number of boys weighing 50 kg is:
(a) 72 (b) 74
(c) 76 (d) None of these
19. The number of girls weighing 40 kg is:
(a) 16 (b) 18
(c) 22 (d) None of these
20. The number of students weighing 50 kg is:
(a) 96 (b) 42
(c) 201 (d) None of these

Directions for Questions 21 to 26: A, B, C, D and E are five different integer. When written in the ascending order of values, the difference between any two adjacent integers is 4. D is the greatest and A the least. B is greater than E but less than C. The sum of the integers is equal to E.

21. The value of A is:
(a) -7 (b) -9
(c) -5 (d) None of these
22. The sum of A and B is:
(a) -10 (b) -15
(c) 10 (d) None of these
23. The greatest number has the value:
(a) 9 (b) -5
(c) 3 (d) 7
24. The sum of the integers is:
(a) 25 (b) -6
(c) -15 (d) None of these
25. The product of the integers is:
(a) -945 (b) 945
(c) 315 (d) None of these
26. What is the positive difference between the lowest and the highest integers?
(a) 8 (b) 6
(c) 16 (d) None of these

Directions for Questions 27 to 31: In November the answers of a prestigious test held nationwide were leaked to a group of unscrupulous people. The CBI has arrested the Don, the mastermind behind it and nine other people—P, Q, R, S, T, U, V, W and X in this matter. On interrogation, certain facts came into light:

Their *modus operandi* consisted of the Don initially obtaining the answer key, then the other nine persons created their answer keys in the following manner:

They obtained the answer key from one or two sources, then he/she compares the answer keys to a question from both sources. If the key to a question from both sources is identical, it is copied, otherwise it is left blank. If the person has only one source, he/she copies the source’s answer into his/her copy. Finally, each person compulsorily replaces one of the answers (not a blank one) with a wrong answer in his/her answer key.

The paper contained 150 questions. So the CBI has ruled out the possibility of two or more of them introducing wrong answer to the same question. The CBI has a copy of correct answer key and tabulated the following data. The data represents question numbers.

Name	Wrong Answer(s)	Blank Answer (s)
P	46	-----
Q	96	46, 90, 25
R	27, 56	17, 46, 90
S	17	-----
T	46, 90	-----
U	14, 46	92, 90
V	25	-----
W	46, 92	-----
X	27	17, 46, 90

27. Who among the following must have two sources?
- (a) P

(b) Q

(c) R

(d) S
28. How many people (excluding the Don) needed to make answer keys before R could make his answer key?
- (a) 3

(b) 4

(c) 6

(d) None of these
29. Both T and W were sources to:
- (a) U

(b) X

(c) Q

(d) None of these
30. Which of the following is definitely true?
- (a) R introduced the wrong answer to question 27.

(b) T introduced the wrong answer to question 46.

(c) U introduced the wrong answer to question 14.

(d) W introduced the wrong answer to question 46.

31. Which of the group has the same sources?

i. P, S & V

ii. T and W

(a) Only (i)

(b) Only (ii)

(c) both (i) & (ii)

(d) None of these

Directions for Questions 32 to 35: Three classmates—X, Y and Z live on the AN Jha Marg, yet they do not know the house number of each other. The houses are numbered from 1 to 99. Since Z is a regular student and attends every class sincerely, his notes are very good and updated. X and Y are not so regular, therefore they desire to meet Z at his house individually.

One day X asks Z, “The number of your house in which you reside is a perfect square or not?” Z replies. Then X asks, “Is it greater than 50?” He again replies. X thinks that he has got the address and decides to visit Z. When X reaches at the address he realises that he is wrong. He then thinks over it again and is not surprised as Z answered only the second question honestly.

Y not aware of X’s conversation, asks Z two questions of his own. Y asks “Is your house number a perfect cube?” Z replies. Then Y asks “Is it greater than 25?”

He answers again. Y thinks that he has got the address but upon reaching there he finds the address incorrect and realises that Z answered only the second question honestly.

If Z’s house number is less than the house number of X and Y and the sum of all three of their house numbers is twice the perfect square of some number then answer the following question:

32. What is X’s house number?

(a) 64

(b) 81

(c) 49

(d) Cannot be determined

33. What is Y’s house number?

(a) 64

(b) 81

(c) 36

(d) Cannot be determined

34. What is Z’s house number?

(a) 55

(b) 65

(c) 25

(d) 85

35. What is the sum of house numbers of all the three X, Y and Z?

(a) 100

(b) 200

(c) 128

(d) Cannot be determined

Directions for Questions 36 to 41: Study the following information and answer the following questions.

It is very easy to remember the ID number of my ATM card which is a nine digit number and every

digit is distinct. If I tell you some clues then you will also be able to remember my ATM card ID number. Let us say the number is PQRSTUVWX and the digit corresponding to it are 1 to 9 though not necessarily in that order respectively. The ID is divisible by 9.

If you delete the digit at its units place, the remaining 8-digit number of my ID is divisible by 8. If you again delete the last digit of the 8-digit number the remaining 7-digit number is divisible by 7 and the process goes on.

36. What is the sum of the digits of the ID number of my ATM card?

- (a) 55
- (b) 45
- (c) 90
- (d) Cannot be determined

37. What is the digit sum of the ID number of my ATM?

- (a) 9
- (b) 8
- (c) 3
- (d) Cannot be determined

38. What is the number represented by the letter R?

- (a) 9
- (b) 8
- (c) 1
- (d) Cannot be determined

39. The number 2 represents which letter?

- (a) V
- (b) W
- (c) X
- (d) Cannot be determined

40. What are the first 5-digits of the ID number of my ATM card?

- (a) 38165
- (b) 61853
- (c) 65472
- (d) 56427

41. What are the last 5-digits of the ID number of my ATM card?

- (a) 54729
- (b) 74592
- (c) 65312
- (d) 47295

Directions for Questions 42 to 45: Some friends went to Netram Sweets. Following is the information about the number of rosogollas they ate:

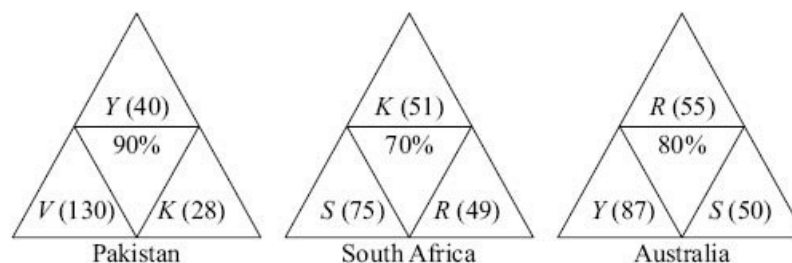
- i. Gimmy ate 8 less than Akshit.
- ii. Dileep and Raj together ate 37.
- iii. Jugal ate 8 more than Dileep.
- iv. Akshit ate 5 more than Dileep.
- v. Akshit and Gimmy together ate 40.

42. How many rosogollas did Raj eat?

- (a) 18
- (b) 24
- (c) 16
- (d) 27

43. Jugal and Dileep together ate how many rosogollas?
- (a) 46 (b) 36
(c) 40 (d) None of these
44. What is the difference between number of rosogollas eaten by Dileep and Raj?
- (a) 1 (b) 2
(c) 3 (d) Data inadequate
45. If the cost of each rosogolla is ` 2, what was the total amount they had to pay?
- (a) ` 208 (b) ` 200
(c) ` 198 (d) None of these

Directions for Questions 46 to 49: Coach Johan sat with the score cards of Indian players from the 3 games in a one-day cricket tournament where the same set of players played for India and all the major batsmen go out. John summarised the batting performance through three figures, one for each game. In each figure, the three outer triangles communicate the number of runs scored by the three top scorers from India. K, R, S, V and Y represent Kaif, Rahul, Saurav, Virender and Yuvraj respectively. The middle triangle in each diagram denotes the percentage of total score that was scored by the top three Indian scorers in that game. No two players score the same number of runs in the same game. John also calculated two batting indices for each players based on his scores in the tournament; the R-index of a batsman is the difference between his highest and lowest scores in the 3 games while the M-index is the middle number, if his scores are arranged in a non-increasing order.



Batting performance of five Indian Batsmen in three Games of One-day International Cricket Tournament.

46. For how many Indian players is it possible to calculate the exact M-Index?
- (a) 0 (b) 1
(c) 2 (d) More than 2
47. Among the players mentioned, who can have the lowest R-index from the tournament?
- (a) Only Kaif, Rahul or Yuvraj
(b) Only Kaif or Rahul
(c) Only Kaif or Yuvraj
(d) Only Kaif
48. How many players among those listed definitely scored less than Yuvraj in the tournament?

(a) 0

(b) 1

(c) 2

(d) More than 2

49. Which of the players had the best M-index from the tournament?

(a) Rahul

(b) Saurav

(c) Virendra

(d) Yuvraj

Directions for Questions 50 to 52: Five women decided to go shopping to M.G. Road, Bangalore. They arrived at the designated meeting place in the following order: 1. Archana, 2. Chellamma, 3. Dhenuka, 4. Helen and 5. Sahnaz.

Each woman spent at least ` 1000. Below are some additional facts about how much they spent during their shopping spree.

i. The woman who spent ` 2234 arrive before the lady who spent ` 1193.

ii. One woman spent ` 1340 and she was not Dhenuka.

iii. One woman spent ` 1378 more than Chellamma.

iv. One woman spent ` 2517 and she was not Archana.

v. Helen spent more than Dhenuka.

vi. Shahnaz spent the largest amount and Chellamma the smallest.

50. The woman who spent ` 1193 is:

(a) Archana

(b) Chellamma

(c) Dhenuka

(d) Helen

51. What was the amount spent by Helen?

(a) ` 1193

(b) ` 1340

(c) ` 2234

(d) ` 2517

52. Which of the following amounts was spent by one of them?

(a) ` 1139

(b) ` 1378

(c) ` 2571

(d) ` 2718

53. Three travellers are sitting around a fire, and are about to eat a meal. One of them has five small loaves of bread, the second has three small loaves of bread. The third has no food, but has eight coins. He offers to pay for some bread. They agree to share the eight loaves equally among the three travellers, and the third traveller will pay eight coins for his share of the eight loaves. All loaves were of the same size. The second traveller (who had three loaves) suggests that he be paid three coins, and that the first traveller be paid five coins. The first traveller says that he should get more than five coins. How much the first traveler should get?

(a) 5

(b) 7

(c) 1

(d) None of these

54. My bag can carry no more than ten books. I must carry at least one book each of management, mathematics, physics and fiction. Also, for every management book I carry I must carry two or

more fiction books, and for every mathematics book I carry I must carry two or more physics books. I earn 4, 3, 2, and 1 points for each management, mathematics, physics and fiction book, respectively, I carry in my bag. I want to maximise the points I can earn by carrying the most appropriate combination of books in my bag.

The maximum points that I can earn are:

- (a) 20
- (b) 21
- (c) 22
- (d) 23

55. Eighty kilograms (kg) of store material is to be transported to a location 10 km away. Any number of couriers can be used to transport the material. The material can be packed in any number units of 10, 20 or 40 kg. Courier charges are ` 10 per hour. Couriers travel at the speed of 10 km/hr if they are not carrying any load, at 5 km/hr if carrying 10 kg, at 2 km/hr if carrying 20 kg and at 1 km/hr if carrying 40 kg. A courier cannot carry more than 40 kg of load.

The minimum cost at which 80 kg of store material can be transported to its destination will be:

- (a) ` 180
- (b) ` 160
- (c) ` 140
- (d) ` 120

Directions for Questions 56 to 57: Elle is three times older than Yogesh; Zaheer is half the age of Wahida. Yogesh is older than Zaheer.

56. Which of the following can be inferred?

- (a) Yogesh is older than Wahida.
- (b) Elle is older than Wahida.
- (c) Elle may be younger than Wahida.
- (d) None of the above.

57. Which of the following information will be sufficient to estimate Elle's age?

- (a) Zaheer is 10 years old.
- (b) Both Yogesh and Wahida are older than Zaheer by the same number of years.
- (c) Both 1 and 2 above.
- (d) None of the above.

58. On the walk through the park, Hamsa collected 50 coloured leaves, all either maple or oak. She sorted them by category when she got home, and found the following:

- (i) The number of red oak leaves with spots is even and positive.
- (ii) The number of red oak leaves without any spot equals the number of red maple leaves without spots.
- (iii) All non-red oak leaves have spots, and there are five times as many of them as there

are red spotted oak leaves.

(iv) There are no spotted maple leaves that are not red.

(v) There are exactly 6 red spotted maple leaves.

(vi) There are exactly 22 maple leaves that are neither spotted nor red.

How many oak leaves did she collect?

(a) 22

(b) 17

(c) 25

(d) 18

59. I have a total of ₹ 1000. Item A costs ₹ 110, item B costs ₹ 90, item C costs ₹ 70, item D costs ₹ 40 and item E costs ₹ 45. For every item D that I purchase, I must also buy only two items of B. For every item A, I must buy one item of C. For every item E, I must also buy two of item D and one of item B. For every item purchased I earn 1000 points and for every rupee not spent I earn a penalty of 1500 points. My objective is to maximise the points earned. What is the number of items that I must purchase to maximise my points?

(a) 13

(b) 14

(c) 15

(d) 16

60. Four friends Ashok, Bashir, Chirag and Deepak are out shopping. Ashok has less money than three times the amount that Bashir has. Chirag has more money than Bashir. Deepak has an amount equal to the difference of amounts with Bashir and Chirag. Ashok has three times the money with Deepak. Each of them have to buy at least one shirt, or one shawl, or one sweater, or one jacket that are priced ₹ 200, ₹ 400, ₹ 600, and ₹ 1000 a piece, respectively. Chirag borrows ₹ 300 from Ashok and buys a jacket. Bashir buys a sweater after borrowing ₹ 100 from Ashok and is left with no money. Ashok buys three shirts.

What is the costliest item that Deepak could buy with his own money?

(a) A shirt

(b) A shawl

(c) A sweater

(d) A jacket

Directions for Questions 61 to 63: Recently, Ghosh Babu spent his winter vacation on Kyakya Island. During the vacation, he visited the local casino where he came across a new card game. Two players, using a normal deck of 52 playing cards, play this game. One player is called the ‘dealer’ and the other is called the ‘player’. First, the player picks a card at random from the deck. This is called the base card. The amount in rupees is equal to the face value of the base card and is called the base amount. The face values of Ace, King, Queen and Jack are ten. For other cards the face value is the number on the card. Once the ‘player’ picks a card from the deck, the ‘dealer’ pays him the base amount. Then the ‘dealer’ picks a card from the deck and this card is called the top card. If the top card is of the same suit as the base card, the ‘player’ pays twice the base amount to the ‘dealer’. If the top card is of the same colour as the base card (but not the same suit), then the ‘player’ pays the base amount to the ‘dealer’. If the top card happens to be of a different colour than the base card the ‘dealer’ pays the base amount to the ‘player’.

Ghosh Babu played the game four times. The first time he picked eight of clubs and the ‘dealer’

picked queen of clubs. Second time, he picked ten of hearts and the ‘dealer’ picked two of spades. Next time, Ghosh Babu picked six of diamonds and the ‘dealer’ picked ace of hearts. Lastly, he picked eight of spades and the ‘dealer’ picked Jack of spades.

Answer the following questions based on these four games.

61. If Ghosh Babu stopped playing the game when his gain would be maximised, the gain in rupees would have been;
 - (a) 12
 - (b) 20
 - (c) 16
 - (d) 4
62. The initial money Ghosh Babu had (before the beginning of the game sessions) was ` X. At no point did he have to borrow any money. What is the minimum possible value of X?
 - (a) 16
 - (b) 8
 - (c) 100
 - (d) 24
63. If the final amount of money that Ghosh Babu had with him was ` 100, what was the initial amount he had with him?
 - (a) 120
 - (b) 8
 - (c) 4
 - (d) 96

Answer Key

1. (a)	2. (a)	3. (a)	4. (b)
5. (b)	6. (b)	7. (c)	8. (c)
9. (a)	10. (a)	11. (b)	12. (b)
13. (c)	14. (b)	15. (b)	16. (a)
17. (b)	18. (a)	19. (b)	20. (a)
21. (b)	22. (a)	23. (d)	24. (d)
25. (a)	26. (c)	27. (b)	28. (b)
29. (a)	30. (c)	31. (c)	32. (b)
33. (a)	34. (a)	35. (b)	36. (b)
37. (a)	38. (c)	39. (b)	40. (a)
41. (a)	42. (a)	43. (a)	44. (a)
45. (a)	46. (c)	47. (d)	48. (b)
49. (b)	50. (c)	51. (b)	52. (a)
53. (b)	54. (c)	55. (b)	56. (b)
57. (c)	58. (b)	59. (b)	60. (b)

Solutions

Questions 1 to 5

From Clue No. (iii),
40% of the total students are female
40% = 36
100% = 90
Total students = 90

	Average	Good	Excellent	Total
Male	18	24	12	54
Female	27	9	0	36
Total	45	33	12	90

Half of the students are either good or excellent means that total of (good + excellent) students = 45
\ Number of excellent = 12
1/3 of male = average male students = 18

Questions 6 to 10

The following structure would work:

	A	B	C	D	Total left
Last	3	3	3	3	0
Second last	12	12 24	12		12
Third last	24				48
First	32				96
Start					128

Hence, the answers are:

6. 3 + 12 = 15 (b)

7. 3 + 12 + 24 = 39 (c)

8. 3 + 12 + 28 + 32 = 71 (c)

9. 128 (a)

10. 32 (a)

Questions 11 to 14

From clues 1, 2, 3, 4, 5 we get:
Orchids = Tulips + 2, Rose = Tulips + 4 Marigold = Tulips + 3 and since Lily < Fireball.
If Tulips is 1 (Clue 6), we get
Tulip = 1, Orchids = 3, Marigold = 4, Rose = 5

Hence, Lily = 2 and Fireball = 6

The answer are:

- 11. Five (b)
- 12. Statement (iii) is redundant. Hence (b)
- 13. $3 + 4 = 7$ (c)
- 14. Six (b)

Questions 15 to 20

Weight	Boys	Girls
40	$(a+35)/3$	$(a+35)/4$
44	a	a
46	b	b
50	$a + 35$	$(a+35)/3$
Total	297	243

Start from the fourth line and take ‘a’ as the number of girls of 44 kgs.

Questions 21 to 26

Reaction Tracker

First Statement	A, B, C, D & E
Second Statement	The numbers are in A.P. with common difference 4.
Third Statement	D _ _ _ A (Descending order from left to right)
Fourth Statement	<u>D</u> <u>C</u> <u>B</u> <u>E</u> <u>A</u> For the sum to be equal to E, the sum of A, B, C and D shall be zero. (Using options in Q21 the value of A should be 9.) Then the series becomes: D C B E A 7 3 -1 -5 -9

Hence the answer are:

- 21. (b)
- 22. -10 (a)
- 23. D is ‘7’. Hence (d).
- 24. The value of E is -5. Hence (d).
- 25. $7 \nmid 3 \nmid 1 \nmid -5 \nmid -9 = -945$ (a).
- 26. $7 - (-9) = 16$. Hence (c).

Questions 27 to 31

Paragraph 1	Ten people P, Q, R, S, T, U, V, W, X and the Mastermind 3
Paragraph 2 & 3	Two ways of creating an answer key: <u>ONE SOURCE</u> : Copy entire answer key and introduce 1 wrong answer.

	Deduction: If you have one source, then you introduce only 1 wrong answer and carry over any wrong answers as well as any blanks from the answer key of the source.																														
	<u>TWO SOURCES</u> : Introduce blank if the two answer keys differ on one particular question. [This means that if one answer key has the answer correct and the other answer key has it wrong then we introduce a blank]. Note: If both answer keys are correct or if both answer keys are incorrect on a particular question, then they will give us the same answer and hence will not differ. Consequently their answer will be copied into the answer key ‘under construction’.																														
Paragraph 4	Note also that since it is given that two or more people have not introduced a wrong answer to the same question, we can deduce that if two answer keys have the same answer wrong, they will be showing the same incorrect answer to that question. Consequently if someone has two sources who have the wrong answer to the same question both of them will show the same incorrect answer to that particular question and that answer will get replicated as it is, into the answer key which is constructed using them both. With this understanding we move to the information contained in the table.																														
Deductions from the table	The first thing we see when we see the table is that P, S and V have only 1 incorrect answer and no blanks. A little thought will give you that this can happen only if there is a single all-correct answer key as the source. Hence, P, S & V must have had the Don as their source and further that P must have introduced the wrong answer to Q 46. S must have introduced the wrong answer to Q 17 & V must have introduced the wrong answer to Q 25. At this point we also know that— In case of 1 source, there will be the introduction of only 1 extra wrong answer and that blanks can only be introduced if there are two sources. From this point on move ahead in the question using two main objectives— (a) Decoding the answer key patterns of the remaining six people (Q, R, T, U, W & X) and (b) Trying to decode the introduction of the remaining wrong answers and the blanks. From the table, T and W are pretty easy to decode. P must have been the source for both of them and T must have introduced the wrong answer to Q 90, while W must have introduced the wrong answer to Q 92. At this point the table would look like: <table><tr><th>Source</th><th>Wrong Answers</th><th>Blank Answers</th></tr><tr><td>Don</td><td>P 46</td><td>--</td></tr><tr><td></td><td>Q 96</td><td>46, 90, 25</td></tr><tr><td></td><td>R 27, 56</td><td>17, 46, 90</td></tr><tr><td>Don</td><td>S 17</td><td>--</td></tr><tr><td>P</td><td>T 46, 90</td><td></td></tr><tr><td></td><td>U 14, 46</td><td>92, 90</td></tr><tr><td>Don</td><td>V 25</td><td>--</td></tr><tr><td>P</td><td>W 46, 92</td><td>--</td></tr><tr><td></td><td>X 27</td><td>17, 46, 90</td></tr></table> Q’s Answer Key: He must have had T and V as his sources. In such a case his answer to Questions 25, 46 and 90 would remain blank and he would introduce the wrong answer to Q. 96.	Source	Wrong Answers	Blank Answers	Don	P 46	--		Q 96	46, 90, 25		R 27, 56	17, 46, 90	Don	S 17	--	P	T 46, 90			U 14, 46	92, 90	Don	V 25	--	P	W 46, 92	--		X 27	17, 46, 90
Source	Wrong Answers	Blank Answers																													
Don	P 46	--																													
	Q 96	46, 90, 25																													
	R 27, 56	17, 46, 90																													
Don	S 17	--																													
P	T 46, 90																														
	U 14, 46	92, 90																													
Don	V 25	--																													
P	W 46, 92	--																													
	X 27	17, 46, 90																													
	We are now left with R, U & X and need to think how these answer keys could have been created. It is evident that X must have been R’s only source (since the blanks are just carried forward by R and he has introduced the wrong answer to Q. 56). Further, X’s answer key could have been formed if he had his sources as S and T.																														

U's answer key could have been created only if his sources were T and W. In that case he would introduce the blank answers 90 and 92, copy the incorrect answer 46 as it is (since there would be no mismatch in that answer) and introduce the wrong answer to Q. 14. Thus the final table would look like:

Source		Wrong Answers	Blank Answers
Don	P	46	--
T and V	Q	96	46, 90, 25
X	R	27, 56	17, 46, 90
Don	S	17	--
P	T	46, 90	
T and W	U	14, 46	92, 90
Don	V	25	--
P	W	46, 92	--
S and T	X	27	17, 46, 90

Thus the answers to the questions are:

- 27. (b)
- 28. P, T, S, X. Hence 4, Option (b).
- 29. U. Option (a)
- 30. (c)
- 31. (c)

Questions 32 to 35

Paragraph 2	Since X has thought that he has the answer to the house number of Z, he must have got ‘yes’ as an answer to both questions he asked. In such a case he would think that Z’s number is one of 64 or 81 (the two 2 digit perfect squares which are greater than 50). Also, we can deduce that since he thinks that he knows the answer he must be living in one of the two houses. Hence, X’s house number is either 64 or 81.
Paragraph 3	By a similar logic Y’s house number is either 27 or 64.
Paragraph 4	We know Z’s house number is greater than 50 but less than Y’s and X’s house numbers. Hence Y’s number must be 64 and X’s number is 81. Also from options to Q. No. 34 we get that Z’s number must be 55 since (81+64+55) is the only addition that satisfies the condition of the sum of the three numbers to be double of a perfect square.

Hence answers are:

- 32. (b)
- 33. (a)
- 34. (a)
- 35. (b)

Questions 36 to 41

The alphabets PQRSTUVWX represent the nine digit number with the given property.
Deduction1: Since all numbers having even digits have to be divisible by even numbers (i.e., PQ is

divisible by 2, PQRS is divisible by 4, PQRSTU is divisible by 6 and PQRSTUVW is divisible by 8), Q, S, U & W must be the 4 even numbers viz. 2, 4, 6 and 8 in some random order.

Consequently P, R, T, V & X (the odd placed digits) must be sharing the odd digits 1,3, 5,7 and 9 in some order.

Deduction 2: Since PQRST is divisible by 5, T must be equal to 5. Thus, the number must be PQRS5UVWX.

Deduction 3: PQR is divisible by 3 and PQRSTU is divisible by 6, hence STU must be divisible by 3. i.e., $S + T + U = S + 5 + U$ must be divisible by 3. Also, S and U are even number. Through trial and error you should realise that there are only two ways this could happen:

(a) If STU represents 258
or (b) If STU represents 654

Note: S can only be 2 or 6 since for PQRS to be divisible by 4, RS should be divisible by 4 and R being an odd number S can only be 2 or 6.

Deduction 4: The following 4 options of filling in the other two even numbers (4 and 6 in case STU is 258 or 2 and 8 in case STU is 654) emerge:

	P	Q	R	S	T	U	V	W	X
Possibility 1		4		2	5	8		6	
Possibility 2		6		2	5	8		4	
Possibility 3		2		6	5	4		8	
Possibility 4		8		6	5	4		2	

36. Sum of digits— $1+2+3+4+5+6+7+8+9=45$.
Hence (b)

37. Digit sum = $4 + 5 = 9$. Hence (a)

38. $R = 1$. Hence (c)

39. $2 = W$. Hence (b)

Now solve Questions 40 and 41 through options.

40. The first five digits could only be 38165 (no other option fits). Hence (a)

41. If 38165 are the first 5 digits, the last 5 emerge out of possibility 4 in the table above and it gives us 54729. Hence (a)

Questions 42 to 45

You will get the following equations:

$A + G = 40$ _____ (1)

$A + D = 5$ _____ (2)

$J + D = 8$ _____ (3)

This means that A is 3 less than J.

$D + R = 37$ _____ (4)

$A - G = 8$ _____ (5)

Using (1) and (5) we get $A = 24$ and $G = 16$,

Hence $D = 19$, $J = 27$ and $R = 18$.

Thus the answer are:

42. $R = 18$ (a) .

43. $27 + 19 = 46$ (a)

44. $19 - 18 = 1$ (a)

45. $24 + 16 + 19 + 27 + 18 \rightarrow 104 \times 2 = 208$ (a)

Questions 46 to 49

Runs scored by top three batsmen against Pakistan

$$= 40 + 130 + 28$$

$$= 198$$

$$90\% = 198$$

$$100\% = 220 \text{ runs '}$$

The rest of the players made only 22 runs.

Runs scored by top three batsmen against South Africa

$$= 51 + 75 + 49$$

$$= 175$$

$$70\% = 175$$

$$100\% = 250$$

The rest of the players made only 75 runs

Runs scored by top three batsmen against Australia

$$= 55 + 87 + 50$$

$$= 192$$

$$80\% = 192$$

$$100 = 240$$

The rest of the players made only 48 runs $Y \rightarrow 40 + \text{South Africa} + 87 = 127 + \text{runs scored against South Africa}$.

$$V \rightarrow 130 + \text{South Africa} + \text{Australia} = 130 + \text{runs scored against South Africa} + \text{Australia}$$

$$K \rightarrow 28 + 51 + \text{Australia} = 79 + \text{Runs scored against Australia}.$$

$$S \rightarrow \text{Pakistan} + 75 + 50 = 125 + \text{Runs scored against Pakistan}.$$

$$R \rightarrow \text{Pakistan} + 49 + 55 = 104 + \text{Runs scored against Pakistan}.$$

46. (c) For Yuvraj, middle index cannot be determined as we don't know the exact runs scored by him against South Africa.

Same is the case with Virendra and Kaif.

For Saurav the middle index will be 50 because whatever runs he scores against Pakistan, they could be maximum 22 or minimum zero. This will not affect the middle number 50.

For Rahul middle index will be 49. (Same logic)

47. (d) R-Index $\rightarrow$ Difference between highest and lowest score.

For Yuvraj minimum R-index can be $87 - 40 = 47$

For Virendra minimum R-index can be $130 - 48 = 82$

For Kaif minimum R-index can be $51 - 28 = 23$

For Sourav $75 - 22 = 53$

For Rahul $55 - 22 = 33$

\ It is Kaif who can have minimum R-index.

48. (b) No. of players who definitely scored less than Yuvraj is 1.

In the worst case if we suppose that Yuvraj scored zero against South Africa, so we have to find how many players definitely scored less than 127.

This could be only Rahul who can score maximum 22 runs against Pakistan and will be able to get a score of 126, which is less than 127.

49. (b) Saurav's middle index is the best.

Questions 50 to 52

From the given information it is clear that four numbers which must have been the values of money spent would be: 2517 (Clue 4), 2234 (Clue 1), 1340 (Clue 2) and 1193 (Clue 1 again).

We need to work out the fifth value.

Also, since Chellamma spent the least and Shahnaz the maximum and since one woman spent 1378 more than Chellamma, a little bit of introspection will give you the following possibilities for the five numbers:

Possibility 1: If 1193 is the least value

The five numbers are:

1193, 1340, 2234, 2517 and 2571 (since $2571 = 1193 + 1378$)

Possibility 2: If 2517 is the maximum value, the five numbers are:

1139 (since $1139 = 2517 - 1378$), 1193, 1340, 2234 and 2517

Accordingly, we have the following possible arrangements for the five women and the amount they spent:

	Possibility 1	Possibility 2
A (x 2517)	2234	
C (least)	1193	
D (x 1340)	2517	
H	1340	
S (Max)	2571	

Note: The thought structure for placing the 5 values with 5 women in the case of possibility 1, goes as follows:

Step 1:

A
C 1193
D

H
S 2571

After placing the least and maximum.

Step 2: 2234 should be before 1193 and Dhenuka cannot have spent ` 1340.

A 2234
C 1193
D 2517
H 1340
G 2571

A close look at the above table shows that clue 5 ($H > D$) is not obeyed by this arrangement. Hence, this solution is wrong.

We thus move into possibility 2, i.e.:

1139, 1193, 1340, 2234, 2517, are the five values. The thought structure for placing the five numbers for the five women goes as:

Step 1: Place the maximum and least values for G and C respectively.

A (x 2517)
C (least, 1139
D (x 1340)
H
G (Maximum) 2517

This leaves us with 1340, 1193 and 2234 to place. ·

Step 2: We need to keep 2 constraints in mind while doing this.

- (a) 2234 has to come before 1193 (remember not immediately before). At the same time $H > D$. (Clue 5)

We can arrange 2234 before 1193 in 3 ways as shown below and then 1340 automatically falls into the vacant space.

A 2234
C 1139
D 1193
H 1340
G 2517

(1)

(Not possible since Dhenuka cannot be 1340)
A 2234
C 1139
D 1340
H 1193
G 2517

(2)

(Not possible since H should be greater than D)
A 1340
C 1139
D 2234
H 1193
G 2517

(3)

Hence, the only possible arrangement is as in (1) above. Hence the answers are:

50. (c) Dhenuka
51. (b) 1340
52. (a) 1139
53. (b) Each loaf of bread is divided into 3 parts. So we have 24 parts and each traveller gets 8 parts.
Ist traveller has 15 parts. He ate 8 parts and gave his 7 parts to the IIIrd traveller.
IInd traveller has 9 parts. He ate 8 parts and gave his 1 part to the IIIrd traveller.

So 8 coins should be divided in the ratio 7: 1.

First traveller gets 7 coins.

54. (c) Maximum points of 22 can be achieved by taking (1 Management + 2 Fiction + 2 Maths + 5 Physics) books.
 $4 + 2 + 6 + 10 = 22$
55. Option (b) is correct.

Questions 56 and 57

Elle	3y	
Yogesh	y	Wahida 2z
Zaheer	z	

56. (b) From the above table we can infer that Elle must be older than Wahida (as she is thrice a higher value (y) while Wahida's age is twice a lower value (z)).
57. (c) Using both pieces of information we get that if Zaheer = 10, then Wahida and Yogesh = 20 and hence Elle = 60 years.

Thus Option (c) is correct.

58. (b)

59. (b)

60. (b)

Questions 61 and 62

The following matrix will help you solve the problem.

Game	Starting Money with Ghosh Babu	Ghosh Babu		Dealer		End
		Gives	Gets	Gets	Gives	
I	0	0	8	16	0	−8
II	-8	0	10	0	10	12
III	12	0	6	6	0	12
IV	12	0	8	16	0	4

61. ₹ 12. Hence (a)

62. The maximum negative he goes to is − 8 after the first game. Hence, Option (b) is correct.

63. Ghosh Babu's net gain is ₹ 4. If after that he has ₹ 100 with him, he must have had ₹ 96 at the start. Hence, (d) is correct.

Puzzle Test

Reasoning puzzles are a favourite question type in all aptitude examinations. In the scheme of chapters on reasoning contained in this book, we have created separate chapters for specific kinds of puzzles which are often asked (like arrangements, rankings etc., which constituted the chapters prior to this one).

All other categories of puzzles—which cannot be specifically categorised as any of the foregoing chapters—you will get to see and practice in this chapter.

As the name suggests, questions on puzzles challenge you to match multiple factors (like name, colour of shirt, place of living, car model driven, etc.). The key skills involved in solving questions on puzzles include but are not limited to:

- (i) **The ability to make a relevant tabular structure for using the clues seamlessly:** For example, suppose you have 5 people A, B, C, D, E wearing 5 colour of shirts red, yellow, green, blue and white drinking 5 kinds of soft drinks Coke, Pepsi, Mirinda, Thums Up and Seven Up—the solution table structure would look like this:

	Red	Yellow	Green	Blue	White	Coke	Pepsi	Mirinda	Thums Up	Seven Up
A										
B										
C										
D										
E										
Coke										
Pepsi										
Mirinda										
Thums UP										

Seven Up					

In the table above, you can see clearly that there is a direct correlation structure between each of the three ‘variables’ in the problem. More of this you would get to see and experience as you move through the solved illustrations and the exercises that follow it.

- (ii) **The ability to order the clues in the correct order of usage (as explained in the theory of logical reasoning):** This includes the ability to perceive the direct clues and use them first to set up the ‘framework’ of problem solving.
- (iii) **The ability to perceive what indirect clues are talking about – and how to use them;**
- (iv) **The ability to convert clues written in language form into visual cues so that you do not need to read the text again and again.** Also, converting the language clues to visual cues is critical for the purpose of being able to ‘see’ all the clues at one go.

Illustrated below are the solutions to a few typical questions on puzzles. We would advise you to first have a look at the questions and try to solve the same on your own before looking at the step-by-step process of solving the same.

ILLUSTRATION 1

At a fancy dress party people were asked to dress as an object that represented their professions. Mr. Abhijit, Mrs. Banerjee, Mrs. Chatterjee, Mr. Dipanjan De and Mr. Elangovan were among the guests. The costumes included a leaf, a pen, a fork, a camera reel, and a stethoscope. The professions included a photographer, a gardener, a compounder, a teacher, and a cook.

- Mr. Abhijit is a teacher.
- Neither Mrs. Banerjee nor Mrs. Chatterjee was dressed as a fork.
- None of the men is a compounder.
- Mr. Dipanjan De is dressed as a camera reel.
- Mrs. Chatterjee is a gardener.

- Which person is dressed as a stethoscope?

(a) Abhijit

(b) Banerjee

(c) Chatterjee

(d) Dipanjan
- What is Elangovan’s profession?

(a) Cook

(b) Gardener

(c) Compounder

(d) Teacher

Solution:

Putting the direct Clues 1 and 4 in the table we get:

Male	Female	Female	Male	Male
Abhijit	Banerjee	Chatterjee	Dipanjan De	Elangovan
Pen			Camera reel	
Teacher			Photographer	

At this point if we use Clue 2, it is evident that it must be Elangovan who is dressed as a fork. Also using clue 5 (Mrs. Chatterjee is a gardener) completes the solution.

Male	Female	Female	Male	Male
Abhijit	Banerjee	Chatterjee	Dipanjan De	Elangovan
Pen		Leaf	Camera reel	Cook
Teacher		Gardener	Photographer	Fork
		From Clue 5		From Clue 2 once we know the details of Dipanjan and Abhijit.

Obviously, Mrs. Banerjee would be the compounder.

The solutions are: 1. Banerjee Option (b)

2. Elangovan is the cook. Option (a) is correct.

ILLUSTRATION 2

Directions for questions 3 to 6: Answer the following questions based on the information below:

For admission into vacant seats of higher secondary classes, most schools prescribe an admission test. There is no uniformity in the nature of these tests, however. Anuja Sinha, Amit Agnihotri, Himesh Reshammiya, Mahima Sharma and Sonit Kala, whose parents had been transferred to Lucknow this summer and who were all seeking admission into Class 9, appeared in entrance tests of different schools. The number of questions in all these tests happened to be different. Amit wrote an entrance test containing exactly twice as many questions as the test that Himesh wrote, Sonit wrote a test that contained 160 questions but it was neither for admission into City Montessori School’s nor for Scindia School. Delhi Public School test contained 200 questions but neither Himesh nor Mahim wrote this test. City Montessori School test had 120 questions but it was not written by Himesh. The test that Mahima Sharma wrote had 25% less questions than the test Amit Agnihotri wrote but it was not for City Montessori School and Scindia School.

Anuja did not write Millennium School’s or Saint Mary’s Convent’s test. When all the tests are compared with regard to number of questions in them, St. Mary’s Convent falls exactly in the middle of the list. Each of the five students wrote exactly one of the tests – the longest one of which contained 200 questions. There is no penalty for wrong answers.

3. Anuja Sinha wrote the test for admission into which school?
- (a) Scindia

(b) Sanskar Valley

(c) City Montessori School

(d) Delhi Public School
4. If Amit Agnihotri secured only 50 per cent marks in the test, each question carrying one mark, how many marks did he secure in this test?
- (a) 50

(b) 60

- (c) 100 (d) None of these
- 5 If both Sonit and Amit secured equal marks in their respective tests and the test Sonit wrote carried 5 marks per question, how many marks did each question in Amit's test carry? It is given that both Amit and Sonit answered 75% questions of their respective tests correctly. Wrong answers did not fetch any marks.
- (a) 1 (b) 2.5
(c) 3 (d) 4
6. Which of the following combinations is true?
- (a) Anjua Sinha – City Montessori School – 180 Questions
(b) Amit Agnihotri – Millennium School – 160 Questions
(c) Himesh Reshammiya – Scindia School – 100 Questions
(d) Mahima Sharma – Scindia School – 150 Questions

Solution: Reaction Tracker

With respect to the number of questions in each test it can be inferred that the number of questions are 200,120,160. Two values are unknown and to compensate for them we have been given that the number of questions in the tests of Amit Agnihotri would be (2x), Himesh Reshammiya (x) and Mahima Sharma (1.5x). The starting table for this situation would be:

	Anuja Sinha	Amit Agnihotri (2x)	Himesh R (x)	Mahima Sharma (1.5x)	Sonit Kapoor	CMS	Scindia	Millenium	St. Marys	DPS
200			NO	NO	NO	NO	NO	NO	NO	YES
160	NO	NO	NO	NO	YES	NO	NO			NO
120			NO		NO	YES	NO	NO	NO	NO
??					NO	NO				NO
??					NO	NO				NO
CMS			NO	NO	NO					
Scindia				NO	NO					
Millennium	NO									
St. Mary's	NO									
DPS			NO	NO	NO					

From the table it is clear that DPS (200) and CMS (120) are shared between Anuja and Amit. This means two possibilities – Anuja 120 and Amit 200 or Amit 120 and Anuja 200. If we take the second possibility into account things would not work out because:

If Amit is 120, the missing numbers are 90 (25% less for Mahima) and 60 (Amit's test had twice Himesh's test). Then the number of questions placed in ascending order would be: 60, 90, 120 (CMS), 160, 200 (DPS). This situation contradicts the condition that when all the tests are compared as to number of questions in them, St. Mary's Convent falls exactly in the middle of the list.

Thus, we must consider the other option, i.e., Amit had 200 questions and Anuja 120. Then the number of questions is 200, 160, 150 (Mahima), 120, 100. The table would now look as follows:

	Anuja Sinha	Amit Agnihotri (2x)	Himesh R (x)	Mahima Sharma (1.5 x)	Sonit Kapoor	CMS	Scindia	Millenium	St. Marys	DPS
200	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES
160	NO	NO	NO	NO	YES	NO	NO	YES	NO	NO
120	YES	NO	NO	NO	NO	YES	NO	NO	NO	NO
150	NO	NO	NO	YES	NO	NO	NO	NO	YES	NO
100	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO
CMS	YES	NO	NO	NO	NO					
Scindia	NO	NO	YES	NO	NO					
Millennium	NO	NO	NO	NO	YES					
St. Mary's	NO	NO	NO	YES	NO					
DPS	NO	YES	NO	NO	NO					

The solutions are:

3. CMS. Option (c) is correct.
4. He would score 100 marks. Option (c) is correct.
5. Sonit & Amit would score 600 marks out of 800 (The total marks would be 800 because Sonit’s test has 160 questions of 5 marks each totaling 800). Hence, Amit’s score would also be out of 800 marks—4 marks per question. Option (d) is correct.
6. Option (c) is correct.

ILLUSTRATION 3

Directions for Question 7: Read the information and answer the question.

Four engineers, designated as CE, SE, EE and AE, read a certain number of newspapers early in the morning. One of them reads four newspapers, another reads three newspapers, the third reads two newspapers while the fourth one reads one newspaper. Below are some additional facts regarding the names of these officers:

- i. Nahiri is not the EE.
 - ii. Hari is the AE.
 - iii. Nahiri is not the CE and he reads more number of newspapers than Lahiri.
 - iv. The one who is the CE reads more number of newspapers than Lahiri.
 - v. The person who is the SE reads the maximum number of newspapers.
 - vi. Bahiri does not read two newspapers.
7. Which of the following statements is necessarily true?
- (a) Hari is the AE and reads two newspapers.
 - (b) Lahiri is the EE and reads one newspaper.

- (c) Bahiri is the CE and reads three newspapers.
 (d) Nahiri is the EE and reads four newspapers.

Solution

From statement (ii), Hari is AE. From Statements (i) and (iii), Nahiri is not the CE or the EE. Hence Nahiri is the SE and reads 4 newspapers as from Statement (v). From Statement (iv), Lahiri is not the CE; this obviously means that Lahiri is the EE and Bahiri is the CE. From Statement (iv) and (vi) Bahiri reads three newspapers. As he reads more than at least one person, we cannot allocate one newspaper to him. Hence Bahiri must read three newspapers. Hence the final distribution is as follows:

Engineer	Name	No. of Newspapers
AE	Hari	2/1
CE	Bahiri	3
SE	Nahiri	4
EE	Lahiri	1/2

Hence, option (c) is the correct answer.

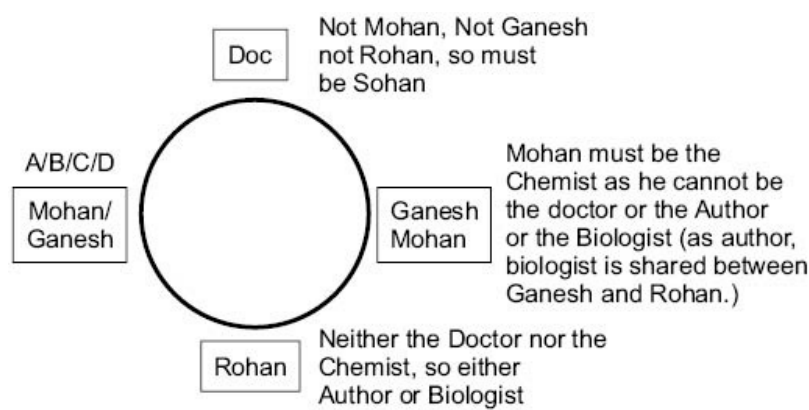
ILLUSTRATION 4

Four brothers Rohan, Sohan, Mohan and Ganesh are at their annual family property fight sitting across a circular table. Their occupations are— author, biologist, chemist and doctor, but not necessarily in that order. Ganesh starts by setting the agenda of the meeting and after him the doctor gives a long discourse of what is right and what is wrong. Rohan is sitting across the doctor and next to the chemist. Mohan is silent throughout the meeting and the chemist speaks only at the very end.

8. The profession of Rohan is
- (a) Author (b) Biologist
 (c) Doctor (d) Cannot be determined
9. Who among the following is the chemist?
- (a) Sohan (b) Mohan
 (c) Ganesh (d) Cannot be determined

Solution

The solution of the above question can be seen in the figure below. (Note the interpretation of the last statement – Mohan was silent throughout the meeting is that Mohan spoke only at the end.)



Based on the interpretations of the figure above we can answer the questions as:

8. Rohan could be the Author or the biologist. Hence, we cannot determine his profession. Option (d) is correct.

9. Mohan was the Chemist. Option (b) is correct.

ILLUSTRATIONS 5 and 6

Directions for Questions 10 to 12: Study the following information carefully and answer the questions given below:

Four people were being interviewed for the same job. They were all interviewed on the same day, but in different rooms (Dharti, Prithvi, Akash and Agni), at different times and by different persons. Determine the name of each candidate, which room they were interviewed in and their appointment time and answer the questions.

- (i) Aishwarya's appointment was just after Mr. Sharma's, which was just after that of the person in room Prithvi.
 - (ii) Mr Narurkar's appointment was at least two hours later in the day than Bhagat's.
 - (iii) Mr Joshi's appointment was just after the person who had an interview in room Agni, who had an appointment just after Chiranjeev.
 - (iv) Three of the four interviewees were: Dhanush, the one with the interview in room Dharti, and the person who had an appointment at 1 pm.
 - (v) The four people were interviewed at 11 am, 12 noon, 1 pm and 2 pm.
 - (vi) Joshi, Narurkar, Zaidi and Sharma were the interviewers whereas Aishwarya, Bhagat Chiranjeev and Dhanush were the interviewees.
10. Sharma's appointment was with
 - (a) Aishwarya
 - (b) Bhagat
 - (c) Chiranjeev
 - (d) Can't be determined
 11. Dhanush's appointment was in the room
 - (a) Dharti
 - (b) Prithvi
 - (c) Akash

(d) Agni

(e) Can't be determined

12. Zaidi's appointment was in the room

(a) Dharti

(b) Prithvi

(c) Akash

(d) Agni

(e) Can't be determined

Solution

In order to solve this question the starting table should be like this.

			A/B/C/D	A/B/C/D	A/B/C/D	A/B/C/D
			J/N/Z/S	J/N/Z/S	J/N/Z/S	J/N/Z/S
			11 am	12 noon	1 pm	2 pm
A/B/C/D	J/N/Z/S	Dharti				
A/B/C/D	J/N/Z/S	Prithvi				
A/B/C/D	J/N/Z/S	Akash				
A/B/C/D	J/N/Z/S	Agni				

The first clue gives us: Prithvi–Mr. Sharma–Aishwarya. This means that these three can only be a 11,12 and 1 pm or 12,1 or 2 pm.

The table evolves to:

			B/C/D	B/C/D	A/B/C/D	B/C/D
			J/N/Z	J/N/Z/S	J/N/Z/S	J/N/Z
			11 am	12 noon	1 pm	2 pm
A/B/C/D	J/N/Z/S	Dharti				
A/B/C/D	J/N/Z/S	Prithvi			X	x
A/B/C/D	J/N/Z/S	Akash				
A/B/C/D	J/N/Z/S	Agni				

The second clue tells us that Narurkar's appointment is at least 2 hours after Bhagat's appointment. This could only mean that Bhagat is at either 11 am or 12 noon and Narurkar could only be at 1 or 2 PM. The table evolves to:

			B/C/D	B/C/D	A/C/D	C/D

			J/Z	J/Z/S	J/N/Z/S	J/N/Z
			11 am	12 noon	1 pm	2 pm
A/B/C/D	J/N/Z/S	Dharti				
A/B/C/D	J/N/Z/S	Prithvi			x	x
A/B/C/D	J/N/Z/S	Akash				
A/B/C/D	J/N/Z/S	Agni				

Clue (iii) gives us that the sequence Chiranjeev – Agni – Joshi. This again means that this sequence could only be at 11,12 and 1 PM or 12, 1 and 2 PM. Thus, Chiranjeev can only be at 11 or 12, Agni only at 12 or 1 and Joshi only at 1 or 2 pm. Introducing these deductions into the existing table we get:

			B/C/D	B/C/D	A/D	D
			Z	Z/S	J/N/Z/S	J/N/Z
			11 am	12 noon	1 pm	2 pm
A/B/C/D	J/N/Z/S	Dharti				
A/B/C/D	J/N/Z/S	Prithvi			x	X
A/B/C/D	J/N/Z/S	Akash				
A/B/C/D	J/N/Z/S	Agni	x			X

Note: In the above table we are now sure about Zaidi’s position at 11 am and Dhanush’s position at 2 pm. Thus we can also remove D and Z from the other possibilities. When we do that, notice thatat 1 pm Aishwarya remains the only possibility left and for 12 noon Sharma remains the only possibility left. The table then becomes:

			B/C	B/C	A	D
			Z	S	J/N	J/N
			11 am	12 noon	1 pm	2 pm
A/B/C/D	J/N/Z/S	Dharti				
A/B/C/D	J/N/Z/S	Prithvi			x	x
A/B/C/D	J/N/Z/S	Akash				
A/B/C/D	J/N/Z/S	Agni	x			x

Clue (iv) tells us that: Dhanush, the person in Dharti and the 1 pm person are different people. So Dhanush is not in Dharti and Dharti is also not at 1 pm.

The table changes to:

			B/C	B/C	A	D

			Z	S	N	J
			11 am	12 noon	1 pm	2 pm
B/C	Z/S	Dharti			x	X
B/C	Z/S	Prithvi			x	X
D	J	Akash	x	x	x	definite
A	N	Agni	x	x	definite	X

From this point if we go back to Clue (iii) we get: Joshi would be at 2 pm (as he is just after the person who had an interview in Agni— which is fixed at 1 pm). Also, Chiranjeev must be at 12 noon as he is just before Agni. The table evolves to:

			B	C	A	D
			Z	S	N	J
			11 am	12 noon	1 pm	2 pm
B/C	Z/S	Dharti			x	x
B/C	Z/S	Prithvi			x	x
D	J	Akash	x	x	x	definite
A	N	Agni	x	x	definite	X

The only thing left at this stage is: Prithvi was just before Sharma. So Prithvi is at 12 noon. The table closes to:

			B	C	A	D
			Z	S	N	J
			11 am	12 noon	1 pm	2 pm
C	S	Dharti	x	Definite	X	x
B	Z	Prithvi	Definite	x	X	x
D	J	Akash	X	x	X	Definite
A	N	Agni	X	x	Definite	x

The answers become:

- Sharma’s appointment was with Chiranjeev. Option (c) is correct.
- Akash. Option (c) is correct.
- Prithvi. Option (b) is correct.

EXERCISE

Directions for Questions 1 to 5: Six friends A, B, C, D, E, and F work in different companies namely—Pentasoftware, Quark, Raymond's, Sunmet, Trump & Gates and Udupi, and each wears different coloured, company-sponsored shirts, viz., blue, green, pink, yellow, purple and red though not necessarily in the same order.

- i. The one wearing the blue shirt works in Sunmet and the one wearing a green shirt works in Pentasoftware.
 - ii. F does not work in Raymond's or Trump and Gates.
 - iii. A wears pink shirt and works in Quark.
 - iv. D does not work in Trump & Gates and purple coloured shirt is not sponsored by Raymond's.
 - v. E works in Udupi and neither D nor B works in Sunmet.
 - vi. Trump & Gates does not sponsor purple or yellow coloured shirts and C works in Pentasoftware.
1. Which colour shirt is sponsored by Raymond's?
 - (a) Yellow
 - (b) Blue
 - (c) Pink
 - (d) Cannot be determined
 2. Which pair is correctly matched?
 - (a) Red—Raymond's—A
 - (b) Red—Trump & Gates—B
 - (c) Green—Raymond's—C
 - (d) None of these
 3. Which of the following is true?
 - (a) Udupi sponsors green shirts.
 - (b) D is working in Trump & Gates.
 - (c) E wears red shirt.
 - (d) Red shirt is sponsored by Trump & Gates.
 4. What is the sequence of companies representing A, B, C, D, E and F?
 - (a) Quark, Pentasoftware, Trump & Gates, Raymond's, Udupi, Sunmet
 - (b) Quark, Trump & Gates, Pentasoftware, Raymond's, Udupi, Sunmet
 - (c) Quark, Pentasoftware, Trump & Gates, Sunmet, Udupi, Raymond's
 - (d) None of these
 5. If Raymond's and Sunmet decide to interchange the colours of sponsored shirts, then which two persons will have to interchange their shirts?
 - (a) D and F
 - (b) A and C
 - (c) D and E
 - (d) B and D

Directions for Questions 6 to 8:

- (i) Five friends Amar, Kapil, Sarvesh, Rohan, and Nagesh wear trousers of different colours—red, yellow, blue, white and green (not necessarily in this order).
- (ii) Each one of them has different likings, *viz.*, reading, playing, travelling, singing and writing.
- (iii) Kapil, who has a liking for singing does not wear yellow trousers. Sarvesh wears red trousers and does not like reading or writing. Nagesh likes to play and does not wear blue or yellow trousers. Amar has liking for writing and Rohan does not wear yellow or green trousers.
6. What is the colour of Kapil's trousers?
- (a) White (b) Blue
- (c) Green (d) Data inadequate
7. What is the liking of Sarvesh?
- (a) Writing (b) Travelling
- (c) Reading (d) Data inadequate
8. Which of the following combinations of person–colour-liking is correct?
- (a) Rohan-Blue-Reading
- (b) Nagesh-White-Playing
- (c) Amar-Yellow-Writing
- (d) None of these

Directions for Question 9 to 11:

- i. Five students—Sujit, Randhir, Neena, Mihir, and Vinay have total five books on subjects—Physics, Chemistry, Maths, Biology and English written by authors Gupta, Khanna, Harish Sharma and Edwin. Each student has only one book on one of the five subjects.
- ii. Gupta is the author of the Physics book which is not owned by Vinay or Sujit. Mihir owns the book written by Edwin.
- iii. Neena owns the Maths book. Vinay has the English book which is not written by Khanna. The Biology book is written by Sharma.
9. Which of the following is the correct combination of subject-student and author?
- (a) Maths–Neena–Harish
- (b) Physics–Mihir–Gupta
- (c) English–Vinay–Edwin
- (d) Biology–Sujit–Sharma
10. The Chemistry book has been penned by whom?
- (a) Gupta (b) Edwin
- (c) Harish (d) Data inadequate
11. Who is the owner of the book written by Harish?

(a) Randhir

(b) Vinay

(c) Sujit

(d) Mihir

Directions for Questions 12 to 15:

- i. Seven friends A, B, C, D, E, F and G are in Patna to attend a seminar at Mindworkzz. Five of them have to go back to five different places—Delhi, Chennai, Lucknow, Bangalore, and Kolkata.
- ii. Five of them are executives, each specialising in Administration, Human Resource Management (HRM), Marketing, Systems and Finance.
- iii. E, an executive is going to Chennai, is neither from Finance nor Marketing. G is a system specialist and is leaving for Delhi. F is an executive but is not going to one of the five places.
- iv. B is an executive from HRM but has come at the airport to see off his friends. A is an executive but not from Marketing and is flying to one of the destinations but not to Bangalore or Kolkata.

12. The one who is going to fly to Chennai is:

(a) Not an executive

(b) From Administration

(c) From Systems

(d) From Finance

13. Who among the following specialises in Marketing?

(a) D

(b) A

(c) F

(d) G

14. C has specialised in which field?

(a) Finance

(b) Marketing

(c) Either Finance or Marketing

(d) None

15. Who is flying to Bangalore?

(a) A

(b) C

(c) D

(d) Data inadequate

Direction for Questions 16 to 20: P, Q, R, S, T, U, and V are seven persons who travel to office everyday in a particular train which stops at five stations—Andheri, Bandra, Vile-Parle, Elphinstor and Chinchpokli respectively— after it leaves the base station.

- i. Three among them get in the train at the base station.
- ii. S gets down at the station next to the station at which U gets down.
- iii. Q does not get down either with P or T.
- iv. V alone gets in at Vile-Parle and gets down with R after having passed one station.
- v. P travels between only two consecutive stations and gets down at Chinchpokli.

- vi. None of them gets in at Bandra.
- vii. R gets in with U but does not get in with either Q or S.
- viii. T gets in with two others and gets down alone after S.
- ix. Q and S work in the same office and they get down together at Vile-Parle.
- x. None of them gets down at Andheri.

16. At which station does T get down?

- (a) Bandra
- (b) Vile-Parle
- (c) Elphinston
- (d) Data inadequate

17. At which station do R and U get in?

- (a) Andheri
- (b) Bandra
- (c) Vile-Parle
- (d) Data inadequate

18. At which station do Q and S get in?

- (a) Andheri
- (b) Base station
- (c) Vile-Parle
- (d) Data inadequate

19. After how many stations does T get down?

- (a) One
- (b) Two
- (c) Four
- (d) None of these

20. T gets down how many stations after U gets down?

- (a) Next station
- (b) One
- (c) Two
- (c) None of these

Directions for Questions 21 to 24: Five friends went to an exhibition. At a shooting stall there are three things to be shot at— balloons, coins and needles. The number of balloons shot are 1, 4, 5, 6 and 8, while the number of coins shot are 0, 1, 2, 4 and 6.

- i. The number of coins shot by A is three times the number of coins shot by the person who shot 4 balloons.
- ii. Three persons, including the one who shot four coins, did not shoot any needle.
- iii. B did not shoot any needle.
- iv. The one who shot one balloon did not shoot any needle or coin. Further he was not (c).
- v. D shot balloons and coins but no needle.
- vi. C who did not shoot any needle, shot half as many coins as the person who shot twice as many balloons as he did.
- vii. E shot two more balloons than A, but A shot two more coins than E.

21. Which of the following is true?

- (a) C shot 8 balloons and 4 coins but no needles.
- (b) The person who shot 5 balloons and one coin shot some needles.

- (c) The person who shot an equal number of balloons and coins also shot needles.
(d) The person who shot 4 balloons and 2 coins also shot needles.
22. Which of these is correct?
- (a) D shot 5 balloons (b) A shot 8 balloons
(c) E shot 1 balloon (d) E shot 6 balloons
23. Which of the following is true?
- (a) B shot 2 coins (b) C shot 4 coins
(c) A shot 6 coins (d) D shot 4 coins
24. The person who shot an equal number of coins and balloons is:
- (a) A (b) B
(c) C (d) D

Directions for Questions 25 and 26: The jailor of XYZ jail had 6 fruits—3 oranges, 2 apples and one pineapple. Four prisoners—101, 102, 103 and 104 are lined up one behind the other; the jailor helps them put the fruit on their head so that they cannot see the fruit kept on their head. Prisoner number 101 can see the fruit kept on the heads of 102, 103 and 104. Prisoner number 102 can see the fruit kept on 103's and 104's head. 103 can see the fruit kept on 104's head. 104 cannot see any of the fruits since he is at the front of the line.

Now, the jailor asks the prisoners to tell the name of the fruit kept on their head. Neither of them could reply.

25. What was the fruit on prisoner number 104's head?
- (a) Orange (b) Apple
(c) Pineapple (d) Cannot be determined
26. Which of the following is definitely false?
- (a) Prisoner number 101 did not see two apples and one pineapple.
(b) Prisoner number 102 did not see one apple and one pineapple or two apples.
(c) Prisoner number 103 did not see pineapple or apple on prisoner number 104's head
(d) All are true.

Directions for Questions 27 and 31: Four couples decided to play Holi. Each couple used three different colours. No two couples used the same combination of colours.

Asha, Bhavna, Chanchal and Divya are females whereas Pradeep, Qartar, Rajeev and Sanjay are males.

The colours they use are red, green, yellow and black.

- i. Chanchal, who is not the wife of Sanjay, used red colour.
- ii. Pradeep's wife used yellow and black colours but Qartar's wife used only one of these colours.

- iii. Asha is not the wife of Pradeep or Sanjay.
- iv. Bhavna and Sanjay's wife both used red and yellow colours.

27. Who among the following is Asha's husband?

- (a) Pradeep
- (b) Qartar
- (c) Rajeev
- (d) Data inadequate

28. Who is Qartar's wife?

- (a) Asha
- (b) Chanchal
- (c) Divya
- (d) Data inadequate

29. Which of the following is not correctly paired?

Person	Colours
(a) Qartar	Green, Yellow, and Black
(b) Pradeep	Red, Yellow and Black
(c) Rajeev	Green, Yellow and Black
(d) All of the above	

30. Which of the following couples are incorrectly matched?

- i. Asha & Rajeev
- ii. Bhavna & Pradeep
- iii. Chanchal & Sanjay
- iv. Divya & Qartar
- (a) Both (i) & (ii)
- (b) All (i), (ii) & (iii)
- (c) Both (iii) & (iv)
- (d) All (ii), (iii) & (iv)

31. Which of the following is correctly matched?

Person	Colours
(a) Asha	Red, Yellow and Black
(b) Bhavna	Green, Yellow and Black
(c) Chanchal	Red, Green and Black
(d) Divya	Yellow, Red and Black

Directions for Questions 32 to 36: Abhay, Balbir, Chandan, Dinesh and Eklakh are alumni of the IAS academy in Mussoorie. They are in Mussoorie to attend an alumni meet along with their wives: Priya, Quindal, Riya, Shailja and Tulsi, (not necessarily in the given order). They stay in the guest room of the academy in rooms numbered from 101 to 105. One interesting thing is that each couple's wedding anniversary is on the coming Friday.

- i. No two married couples were married in the same year.
- ii. Balbir whose wife is not Shailja was married three fourths of as many years ago as Dinesh.

- iii. Eklakh is staying in room number 103.
- iv. Priya was married five years before Abhay and three years before Eklakh.
- v. Only Shailja's room is in-between Abhay's and Eklakh's room.
- vi. Abhay, who was married before Shailja, was married five years after Chandan got married.
- vii. The couple staying in room number 101 got married 10 years before the couple staying in room 104.
- viii. Quindal is staying in room number 102.
- ix. Tulsi was married before Riya and she was married 12 years before Quindal got married.

Based on the above information, answer questions 32 to 36:

32. Who is the husband of Riya?
- (a) Chandan
 - (b) Abhay
 - (c) Balbir
 - (d) Data inadequate
33. Who is celebrating the silver jubilee of his marriage anniversary?
- (a) Chandan
 - (b) Abhay
 - (c) Balbir
 - (d) Data inadequate
34. Who is the wife of Balbir?
- (a) Riya
 - (b) Quindal
 - (c) Shailja
 - (d) Data inadequate
35. If rooms are allotted on the basis of their married years, then which room number does not need shifting of its occupants? (105 is allotted to couples of maximum married years and 101 is allotted to couples of least married years).
- (a) 101
 - (b) 103
 - (c) 104
 - (d) All rooms need a shift
36. For how many years has Eklakh enjoyed his married life?
- (a) 30
 - (b) 27
 - (c) 25
 - (d) Data inadequate
37. Persons X, Y, Z and Q live in red, green, yellow or blue coloured houses which are in a sequence on a street. Z lives in a yellow house. The green house is adjacent to the blue house. X does not live adjacent to Z. The yellow house is in between the green and red house.
- The colour of the house X lives in is:
- (a) Blue

(b) Green

(c) Red

(d) Not possible to determine

38. Five persons with names P, M, U, T and X live separately in any one of the following: in a palace, a hut, a fort, a house or a hotel. Each one likes two different colours from among the following: blue, black, red, yellow and green. U likes red and blue, T likes black. The person living in a palace does not like black or blue. P likes blue and red M likes yellow. X lives in a hotel. M lives in a:

(a) Hut (b) Palace

(c) Fort (d) House

39. The Banerjees, the Sharmas, and the Pattabhiramans each have a tradition of eating Sunday lunch as a family. Each family serves a special meal at a certain time of day. Each family has a particular set of chinaware used for this meal. Use the clues below to answer the following questions.

- i. The Sharma family eats at noon.
- ii. The family that serves fried brinjal uses blue chinaware.
- iii. The Banerjee family eats at 2 o'clock.
- iv. The family that serves sambar does not use red chinaware.
- v. The family that eats at 1 o'clock serves fried brinjal.
- vi. The Pattabhiraman family does not use white chinaware.
- vii. The family that eats last likes makkai-ki-roti.

Which one of the following statement is true?

- (a) The Banerjees eat makkai-ki-roti at 2 o'clock, the Sharmas eat fried brinjal at 12 o'clock and the Pattabhiramans eat sambar from red chinaware.
- (b) The Sharmas eat sambar served in white chinaware, the Pattabhiramans eat fried brinjal at 1 o'clock, and the Banerjees eat makkai-ki-roti served in blue chinaware.
- (c) The Sharmas eat sambar at noon, the Pattabhiramans eat fried brinjal served in blue chinaware, and the Banerjees eat makkai-ki-roti served in red chinaware.
- (d) The Banerjees eat makkai-ki-roti served in white chinaware, the Sharmas eat fried brinjal at 12 o'clock and the Pattabhiramans eat sambar from red chinaware.

Directions for Questions 40 to 41: Read the information and answer the questions.

Amitabh, Bhagyashree, Chunky, Dharmendra, Ekta, Farhan and Govinda are students of a class. Each of them has a different favourite subject, viz., Economics, Commerce, Zoology, Sociology, Statistics, Urdu and Computers but not necessarily in the same order. There are two such students whose one sister each is there in the group. There is no other relation among the students. No boy likes Commerce or Urdu. Dharmendra, who does not like Sociology and Statistics, is the brother of the

student who likes Computers. The student who likes Sociology is the sister of that boy student who likes Economics. F is a boy student, B is sister of A.

40. Which of the following is a pair of brother-sister other than Amitabh and Bhagyashree?
- (a) Dharmendra and Govinda
 - (b) Dharmendra and Chunky
 - (c) Dharmendra and Ekta
 - (d) Data Inadequate
41. Which of the following is true?
- (a) Dharmendra likes Commerce.
 - (b) Chunky, Bhagyashree and Dharmendra are girl students.
 - (c) The number of girls is more than that of the number of boys in the group.
 - (d) None of these

Directions for Question 42 to 43: Answer the questions by studying the information given below.

Five colleagues met at the party. While chatting that night they discovered that each of them has a favourite TV show that airs one night during the week. By coincidence, each of them loves a different show, each of which airs on a different night and channel. Given below are a few clues about the full name of each colleague, the genre their favourite show is in, the night each show airs, and the channel the show airs on (one of the channel is Channel 6).

- (a) Manmohan didn't watch a show on Friday night. Mr. Obama watched his favourite show on Channel 21, the highest numbered channel. The favourite shows airing on Tuesday and Thursday night were on channels one number apart.
- (b) The man who watched the western show on Channel 7 didn't watch TV on Wednesday night. Mark watched a channel one digit lower than the man who watched the sports show.
- (c) Mr. Singh watched the show on Channel 5, the lowest-numbered channel. The science fiction show aired on Channel 12.
- (d) Barack didn't watch TV on Monday night. Mr. Twain didn't watch the action show. Manmohan didn't watch the sports show.
- (e) Gordon's favourite show aired on a channel higher than the Tuesday night show but lower than the show that Charles watched.
- (f) The five colleagues watched their favourite shows during the week in the following order: Mark, the man who watched Channel 7, the man who watched the mystery, Mr. Brown, and Mr. Babbage.

42. What is the full name of Barack?

- (a) Barack Babbage
- (b) Barack Singh
- (c) Barack Brown
- (d) Barack Obama

43. Channel 5 is viewed by whom, on which day and which is his favourite program genre?

- (a) Mark Twain, Monday and Western
- (b) Charles Singh, Monday and Action

(c) Barack Babbage, Thursday and Sports

(d) Mark Singh, Monday and Action

Directions for Questions 44 to 45: Read the following information and answer the questions that follow.

Houses numbered 1A to 4D situated east to west in that order, are each occupied by College of Commerce professors. They all teach different subjects, possess different makes and different models (years) of bikes:

- (i) Anurag Kesarwani does not own a Suzuki (owner of which is professor of Gujarati language).
- (ii) Anshul has a Honda bike.
- (iii) Mr. Khanduja lives in House No. 3.
- (iv) Mr. Singh is the professor of Sanskrit language.
- (v) 2001 model of bike owned by the Urdu language professor is not of BMW make.
- (vi) Vivek is the professor of Bengali language.
- (vii) Mr. Saxena is not the owner of 2004 model bike, owner of which lives next to in a house westward of one owning 2002 model bike.
- (viii) Siddhartha's is House No. 4.

44. Prof. Singh owns which make and model (year) of bike?

- (a) Suzuki of 2001
- (b) BMW of 2004
- (c) Honda of 2002
- (d) BMW of 2003

45. If Urdu and Sanskrit language professors exchange their bikes, who could be the owner of the latest model?

- (a) Anurag only
- (b) Siddhartha only
- (c) Vivek only
- (d) Siddhartha or Vivek only

Directions for Questions 46 to 48: Study the following information carefully and answer the questions given below:

Five friends Michael, Mark, Lewis, Karan and Jenson are students of five different disciplines—medical, engineering, architecture, arts, management and each plays a different musical instrument—sitar, tabla, sarod, guitar and violin.

Lewis, a medical student, does not play sarod or sitar nor guitar.

Jenson is neither a student of Engineering nor Management.

Karan, who plays tabla, is an Arts student.

Neither Jenson nor Michael plays sarod.

46. Who among the following plays Sarod?

- (a) Michael
- (b) Mark

- (c) Jenson (d) Data inadequate
47. The guitarist is a student of which of the following disciplines?
- (a) Engineering
(b) Either Engineering or Management
(c) Architecture
(d) Data inadequate
- 48 Who among the following plays Sitar?
- (a) Michael (b) Mark
(c) Jenson (d) Data inadequate

Directions for Questions 49 to 51: Read the information and answer the questions that follow.

Five friends—Ramesh, Suresh, Tanveer, Umesh, and Vikram—each present one paper to their class on mathematics, history, biology, chemistry, or dermatology—one day a week, Monday through Friday.

- (i) Vikram does not do chemistry and does not give his presentation on Tuesday.
(ii) Suresh makes the dermatology presentation, and does not do it on Monday or Friday.
(iii) The mathematics presentation is made on Thursday.
(iv) Tanveer presents his presentation, which is not on Chemistry, on Wednesday.
(v) The biology presentation is on Friday, and not by Umesh.
(vi) Ramesh makes his presentation on Monday.
49. What day is the Chemistry presentation made?
- (a) Friday (b) Monday
(c) Tuesday (d) Wednesday
50. What presentation does Vikram do?
- (a) Chemistry (b) Dermatology
(c) Mathematics (d) Biology
51. What day does Umesh make his presentation on?
- (a) Monday (b) Tuesday
(c) Wednesday (d) Thursday

Answer Key

1. (a)	2. (b)	3. (d)	4. (c)
5. (a)	6. (d)	7. (b)	8. (c)
9. (d)	10. (b)	11. (b)	12. (b)

13. (c)

17. (d)

21. (c)

25. (a)

29. (a)

33. (b)

37. (a)

41. (c)

45. (d)

49. (b)
14. (d)

18. (d)

22. (a)

26. (d)

30. (c)

34. (b)

38. (b)

42. (c)

46. (b)

50. (d)
15. (d)

19. (c)

23. (c)

27. (c)

31. (c)

35. (d)

39. (c)

43. (d)

47. (d)

51. (d)
16. (c)

20. (c)

24. (a)

28. (b)

32. (b)

36. (b)

40. (d)

44. (c)

48. (d)

Solutions

Questions 1 to 5

The direct clues give you the following linkages—green – Pentasoft, Blue– Sunmet
A– Pink – Quark, E – Udupi, C – Pentasoft
Combining these clues will give you the following table:

A	B	C	D	E	F
Quark		Pentasoft	Udupi		
Pink		Green			

At this point use Clue no. (ii) [about F]. This will give you that the correct pairing for Sunmet is with F. Also use Clue (iv) at this stage.
The table would evolve to:

A	B	C	D	E	F
Quark	Trump & Gates	Pentasoft	Raymonds	Udupi	Sunmet
Pink	Green				Blue

Now using Clue (vi), you will get that Trump & Gates is red and since purple is not with Raymonds, the final table will be

A	B	C	D	E	F
Quark	Trump & Gates	Pentasoft	Raymonds	Udupi	Sunmet
Pink	Red	Green	Yellow	Purple	Blue

From this point, you need to just read off the respective answers to the questions asked from the completed table.

The answers are:

- 1. Yellow. Option (a)
- 2. Option (b) is correct.
- 3. Option (d) is correct.
- 4. Option (c) is correct.
- 5. Option (a) is correct.

Questions 6 to 8

Reaction Tracker

	Reaction
Clue 1	5 People and 5 Trouser Colours
Clue 2	5 Different Likings
Clue 3 Statement 1	Kapil-Sing-Not Yellow
Statement 2	Sarvesh – Red–Not Read or Write
Statement 3	Nagesh – Play – Not Blue or Yellow
Statement 4	Amar–Write
	Rohan – Not Yellow or Green

At this stage, combining Statements 1, 2, 3 and 4 of Clue (iii) you will get the following table:

Amar	Kapil	Sarvesh	Rohan	Nagesh
Write	Sing	Travel*	Read *	Play
Yellow#	Blue/White/ Green		Blue/ White	White/ Green

- * Since Sarvesh does not read, Rohan must like reading and Sarvesh must like travelling.
 - # Amar must be yellow, since Kapil, Rohan and Nagesh are not yellow.
- Further we are not able to define the exact colours of Kapil, (who can be blue/white or green), Rohan (blue or white) or Nagesh (white/green). Hence the above table is the final one. Thus, Kapil’s trouser colours cannot be answered. (Question 6) Sarvesh likes travel (Question 7) and Amar–yellow–write is the correct combination.

The answers are:

- 6. Option (d)
- 7. Option (b)
- 8. Option (c)

Questions 9 to 11

Reaction Tracker

	Reaction
Clue 1	5 students, 5 books and 5 authors
Clue 2 Statement 1	Gupta – Physics – Not Vinay or Sujt

Statement 2	Edwin–Mihir
Clue 3 Statement 1	Maths –Neena
Statement 2	English – Vinay–not Khanna
Statement 3	Sharma – Biology

On the basis of the reaction to Clue (ii) and (iii) as shown above, you should realise that the maximum numbers of direct links are between the author and the subject. Hence, your solution table should first give a structural placement of authors and subjects. When you do so, the following table shall emerge.

Solution Table 1:

Sharma	Edwin	Gupta		
Biology		Physics	Maths	English
	Mihir		Mihir	Vinay

Reacting to the above the table, you will immediately see that Edwin must be Chemistry. Further using Sentence (ii) of Clue (iii) you will get that since Vinay is not using a book authored by Khanna, he must be using Harish and consequently Khanna must have authored Maths.

We also know from Clue (ii), Sentence 1 that Gupta and Physics is not owned by Vinay or Sujit Hence, Sujit must be Biology and Randhir must be Physics. The final table then becomes:

Sharma	Edwin	Gupta	Khanna	Harish
Biology	Chemistry	Physics	Maths	English
Sujit	Mihir	Randhir	Neena	Vinay

- Consequently the correct answers are:
- 9. Biology–Sujit–Sharma
 - 10. Edwin
 - 11. Vinay

Questions 12 to 15

From Clues (i), (ii), and (iii):

7 people–A, B, C, D, E, F & G

5 cities – Delhi, Chennai, Lucknow, Bangalore and Kolkata

5 specialisations – Admin, HRM, Marketing, Systems, Finance

From Clues (iii) and (iv) we have:

D	
E – Chennai	X Fin, X Marketing
G – Delhi	Systems
F – No place	?

B – No place	HRM
A – X Bangalore, X Kolkata	X Marketing
C -	

Refining the above table, the following deduction can be made: E must be from Admin. The table evolves to:

D-	
E–Chennai G–Delhi F–No place B–No place A–Lucknow C-	Admin Systems Marketing HRM Finance

Hence the answers are:

- 12. (b)
- 13. (c)
- 14. (d)
- 15. (d)

Questions 16 to 20: The following table will emerge out of the given clues:

Station	Gets in	Gets down
Base Station Andheri Bandra Vile-Parle Elphinston Chinchpokli	T RU/QS QS/RU V P	_____ _____ U QS T VRP

Start from the Statement (iv).
 Then go through statement (v): P travels only two stations and gets down at Chinchpokli which means that he must have boarded at Elphinston.
 Then go to Statement (ix), proceed through (viii) to Statement (ii) and proceed as said in the remaining statements.
 The answers are:

- 16. Elphiston. Option (c) is correct.
- 17. Data inadequate as we do not know whether it is the base station or Andheri. Option (d) is correct.
- 18. Data inadequate as we do not know whether it is the base station or Andheri. Option (d) is correct.

19. T gets down after 4 stations. Option (c) is correct.
20. Option (c) is correct.

Questions 21 to 24:

Reaction Tracker

Opening Paragraph	5 friends A, B, C, D and E Balloons 1, 4, 5, 6 and 8		
Clue (i)	Coins 0, 1, 2, 4 and 6 needles, means A must have shot 6 coins and somebody must have shot 4 balloons and 2 coins.		
Clue (ii)			
Clue (iii)			
Clue (iv)			
Clue (v)			
Clue (vi)	C shot no needle. Further, someone shot twice as many coins and balloons as C. This means that C must have shot 4 balloons and someone else must have shot 8 balloons. But we also know that the person who shot 4 balloons shot 2 coins. Hence, someone else shot 8 balloons and 4 coins.		
Clue (vii)	A shot 2 more coins than E, means that E must have shot 4 coins (and hence 8 balloons). Hence, A must have shot six balloons. The table now evolves to:		

Hence the answers are:

21. Option (c) is true for A. Hence (c).
22. D shot 5 balloons is true. Hence Option (a) is correct.
23. Option (c) is again correct from the table.
24. A. Hence Option (a) is correct.

Questions 25 and 26: The following 19 possibilities emerge for what 101 could have seen. (Note: Be systematic while making this table.)

Possibility #	104	103	102
1	O	O	O

2	O	O	A
3	O	O	P
4	O	A	O
5	O	P	O
6	A	O	O
7	P	O	O
8	A	A	O
9	A	O	A
10	O	A	A
11	O	A	P
12	O	P	A
13	P	O	A
14	A	O	P
15	O	A	P
16	O	P	A
17	A	A	P
18	A	P	A
19	P	A	A

From the table above it is clear that if 101 had seen 2 apples and 1 pineapple he would have answered immediately. But since he doesn’t answer, possibilities 17, 18 or 19 can be ruled out.

102 also realises that 101 is not answering and hence rules out possibilities 17, 18 and 19. He considers what he sees on 103 and 104 in the context of possibilities 1–16. It can be seen from the table that if he had seen 2 apples, he would know that there was only Possibility 8 to consider. In such a case he would know that there was definitely an orange on his head. However, he does not answer. Thus, we can conclude that Possibility 8 is not possible. 103 realises that 102 is not answering and considers only possibilities 1–7 and 9–16.

Of these, we can realise that if he had seen an apple or a pineapple on 104 he would know that he had an orange on his head. But, since he doesn’t answer, we can eliminate Possibilities 6, 7, 9, 13 and 14. This leaves us with only Possibilities 1–5, 10–12 and 15–16. Hence:

- 25. (a) 104 must have an orange on his head.
- 26. (d) All statements are true.

Questions 27 to 31: The starting grid in random order would be:

Wives	Husbands	Colour Combinations

Asha (A)	Pradeep (P)	(1) Red, Green, Yellow
Bhavna (B)	Qartar (Q)	(2) Red, Green, Black
Chanchal (C)	Rajeev (R)	(3) Red, Yellow, Black
Divya (D)	Sanjay (S)	(4) Green, Yellow, Black

Using Clue (i) and Clue (iii), we can make some conclusions about Asha and Chanchal.

Asha– Q/R	Pradeep (P)	(1) Red, Green, Yellow
Bhavna–	Qartar (Q)	(2) Red, Green, Black
Chanchal–P/Q/R 1/2/3	Rajeev (R)	(3) Red, Yellow, Black
Divya	Sanjay (S)	(4) Green, Yellow, Black

Using Clues (ii) and (iv), we get some conclusions about the men and the colour combination they used. (Note: We know Bhavna is not Sanjay’s wife because Clue (iv) mentions them as separate individuals).

Asha– Q/R	Pradeep 3/4	(1) Red, Green, Yellow
Bhavna– P,Q,R 1/3	Qartar 1/2	(2) Red, Green, Black
Chanchal– P/Q/R 1/2/3	Rajeev	(3) Red, Yellow, Black
Divya	Sanjay 1/3	(4) Green, Yellow, Black

From the above table (the wives column) it is clear that P, Q and R have to be shared amongst A, B and C in random order. Hence, Divya must be Sanjay’s wife.

The table evolves to:

Asha– Q/R	Pradeep 3/4	(1) Red, Green, Yellow
Bhavna– P/Q/R 1/3	Qartar 1/2	(2) Red, Green, Black
Chanchal– P/Q/R 1/2/3	Rajeev	(3) Red, Yellow, Black
Divya– S 1/3	Sanjay 1/3	(4) Green, Yellow, Black

From the above table, it is evident that Color Combination 4 belongs to Asha (as Color Combinations 1/2/3 are shared between Bhavna, Chanchal and Divya). Also, Chanchal would get Color Combination 2 as it cannot go to any other woman.

The table now becomes:

Asha– Q/R 4	Pradeep 3/4	(1) Red, Green, Yellow
Bhavna– P/Q/R 1/3	Qartar 1/2	(2) Red, Green, Black
Chanchal– P/Q/R 2	Rajeev	(3) Red, Yellow, Black
Divya– S 1/3	Sanjay 1/3	(4) Green, Yellow, Black

At this stage Clue (ii) gives us that Qartar’s wife used only one colour out of yellow and black.

Hence, Asha (Color Combination 4) cannot be Qartar’s wife and thus must be Rajeev’s wife.

This means that P and Q must be shared between B and C. Since we know that Pradeep’s wife used yellow and black colours, Chanchal cannot be married to Pradeep (Chanchal’s colour combination does not use both the colours yellow and black). Thus Pradeep must be married to Bhavana. Thus, the

table evolves to:

A – R – (4)
B – P – (3)
C – Q – (2)
D – S – (1)

Accordingly the answers are:

- 27. Rajeev (c)
- 28. Chanchal (b)
- 29. (a)
- 30. (c)
- 31. (c)

Questions 32 to 36 : The initial grid to start off would be something like:

	P	Q	R	S	T	101	102	103	104	105
A										
B										
C										
D										
E										

The following deductions would follow:

From Clues (ii), (iii), (iv) and (v) the grid would evolve to:

	P	Q	R	S	T	101	102	103	104	105
A	×			×				×		
B				×				×		
C								×		
D								×		
E	×			×		×	×	√	×	×

Besides, from these 4 clues we could also realise the following additional deductions:

- (a) Order of marriage $P \xrightarrow{+3} E \xrightarrow{+2} A$ (From Clue iv)
- (b) Shailja must be in either 102 or 104.
- (c) Abhay’s room must be either 101 or 105.

Using Clue (vi) we get that Shailja is not Abhay’s wife and neither is she Chandan’s wife. (Since Chandan was married before Abhay and Shailja was married after Abhay). Hence, she must be Dinesh’s wife.

Also, Clue (viii) gives us that Quindal is in Room 102, hence from deduction (b) above Shailja must be in Room 104 and consequently Abhay must be in Room 105. The table would evolve to:

	P	Q (102)	R	S(104)	T	101	102	103	104	105
A	×	×		×		×	×	×	×	√
B				×				×	×	×
C				×				×	×	×
D	×	×	×	√	×	×	×	×	√	×
E	×	×		×		×	×	√	×	×

Note: One additional deduction we have drawn in the above table is that Quindal (being in Room 102) cannot be the wife of either Abhay (105) or Eklakh (103). Hence R and T would be the wives of A and E (in random order) as they have to be shared between A and E.
This also means that P and Q must be shared between B and C. Thus the grid evolves to:

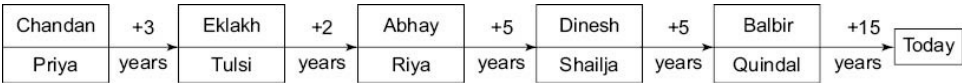
	P	Q	R	S	T	101	102	103	104	105
A	×	×		×		×	×	×	×	√
B			×	×	×			×	×	×
C			×	×	×			×	×	×
D	×	×	×	√	×	×	×	×	√	×
E	×	×		×		×	×	√	×	×

At this point use Clue (ix), along with the deduction $P \overset{+3}{\rightarrow} E \overset{+2}{\rightarrow} A$
Since Tulsi and Riya have to be shared between Abhay and Eklakh and Eklakh has got married before Abhay, he must be married to Tulsi and Abhay to Riya. The grid would evolve to:

	P	Q	R	S	T	101	102	103	104	105
A	×	×	√	×	×	×	×	×	×	√
B			×	×	×			×	×	×
C			×	×	×			×	×	×
D	×	×	×	√	×	×	×	×	√	×
E	×	×	×	×	√	×	×	√	×	×

At this stage if you try to draw **a time line for their marriages**, you would get the following figure:
Existing figure $Priya \overset{+3}{\rightarrow} Eklakh \overset{+2}{\rightarrow} Abhay$

If we use the logic contained in Clue (vi), we get that Abhay married 5 years after Chandan. Hence, Chandan and Priya must be married. Consequently Quindal and Balbir must be married. Also, since Balbir got married $3/4^{th}$ the number of years ago as Dinesh we can conclude that Balbir got married 15 years ago. Based on these deductions the timeline looks like:



The final table is:

	P	Q	R	S	T	101	102	103	104	105

A	×	×	√	×	×	×	×	×	×	×	√
B	×	√	×	×	×	×	√	×	×	×	×
C	√	×	×	×	×	√	×	×	×	×	×
D	×	×	×	√	×	×	×	×	×	√	×
E	×	×	×	×	√	×	×	√	×	×	×

The answers are:

32. Abhay. Option (b) is correct.
33. Abhay has been married for 25 years. Option (b) is correct.
34. Quindal. Option (b) is correct.
35. All the rooms would need to shift. Option (d) is correct.
36. 27 years. Option (b) is correct.
37. We have two possible combinations.

	Z		X
red	yellow	green	blue
X		Z	
blue	green	yellow	red

But from both combinations we get that X lives in the blue house. Option (a) is correct.

38. M would live in a palace as U,T and P like either black or blue and X lives in a hotel. Option (b) is correct.
39. The grid would be:

12	1	2
Sharma's	Pattabhiraman	Banerjee
White	Blue	Red
Sambar	Fried Brinjal	Makkai-ki-roti

Option (c) is correct.

Questions 40 and 41: Let us tabulate the given information to get a clear picture of the scenario.

The first piece of information that fills the blanks is that no boy likes Commerce or Urdu. Then next information that is useful is that Dharmendra does not prefer Sociology and Statistics and is a boy hence he does not like Urdu and Commerce also. He is also brother of the person who opts for Computers. (Thus the person opting for computers must be a girl). So he must be having either Economics or Zoology. Now we are given that Amitabh and Bhagyashree are brother and sister and hence Amitabh and Bhagyashree both will not have computers. Also Farhan is given as a boy student hence, by default from previous information, he does not like Urdu and Commerce, and also since he is a boy he cannot be Dharmendra's sister and thus cannot have computers. Thus, we have covered all the possibilities for boys except for the pair of brother and sister having Economics and Sociology.

Clearly since Amitabh and Bhagyashree are the only brother and sister mentioned in the information, they must be the ones having those subjects. Consequently Dharmendra must be having Zoology and Farhan would have Statistics. Commerce, Urdu and Computers would be shared between Chunky Ekta and Govinda in some random order. Hence, they must be girls. The resultant table can be drawn as follows:

	Brother of Bhagyashree	Sister of Amitabh	Girl	Boy	Girl	Boy	Girl
	Amitabh	Bhagyashree	Chunky	Dharmendra	Ekta	Farhan	Govinda
Economics	√	X	X	X	X	X	X
Commerce	X	X	???	X	???	X	???
Zoology	X	X	X	√	X	X	X
Sociology	X	√	X	X	X	X	X
Statistics	X	X	X	X	X	√	X
Urdu	X	X	???	X	???	X	???
Computers	X	X	???	X	???	X	???

The answers are:

- 40. Option (d) is the correct answer as we do not know who Dharmendra’s sister is.
- 41. Option (c) is the correct answer as there are 4 girls in the group.

Questions 42 and 43: From the given information a table can be formed which will give a clear picture of the scenario.

First Name	Last Name	Program	Day	Channel
Barack	Brown	Sports	Thursday	6
Gordon	Babbage	Science Fiction	Friday	12
Manmohan	Twain	Western	Tuesday	7
Mark	Singh	Action	Monday	5
Charles	Obama	Mystery	Wednesday	21

- 42. Option (c) is the correct answer.
- 43. Option (d) is the correct answer.

Questions 44 and 45: To solve the question, we have to decode the information step by step and hence interpret the information.

Anshul owns the Honda and Vivek teaches Bengali => Gujarati teacher owning Suzuki – who isn’t Anurag Kesarwani – is Siddhartha in House No. 4D (Clues (ii), (vi), (i), (viii)). Prof. Singh who teaches Sanskrit is Anshul (Clue (iv)). Anurag Kesarwani, who teaches Urdu owns 2001 model bike which is not BMW (Clue (v)), neither is it Suzuki nor Honda – an unknown make. So, Vivek Khanduja owns BMW in House No. 3C and Siddhartha’s surname is Saxena (Clue (iii)).

Since Siddhartha’s vehicle is not a 2002 or 2004 model (Clue (vii)) and neither a 2001 model – it is model of an unknown year (which could be 2005 or an earlier year).

Now 2002 model belongs to House No. 2 and 2004 model to House No. 4.

Anshul Singh’s is 2002 model and Vivek Khanduja’s is 2003 model.

Remaining House No. 1A is Anurag Kesarwani’s.

The summary is as under

Anurag – Kesarwani – Urdu –	2001
Anshul – Singh – Sanskrit – Honda	2002
Vivek – Khanduja – Bengali – BMW	2003
Siddhartha – Saxena – Gujrati – Suzuki	2004

44. Option (c) is the correct answer.

45. Option (d) is the correct answer.

Questions 46 to 48: To understand the arrangement we need to tabulate all the clues and facts given in the question.

DISCIPLINE						MUSICAL INSTRUMENTS				
NAME	MEDICAL	ENGG.	ARCH.	ART	MGMT	SITAR	TABLA	SAROD	GUITAR	VIOLIN
MARK	X	2001	X	X	2001	X	X	2001	X	X
MICHAEL	X	2001	X	X	2001	2001	X	X	2001	X
LEWIS	2001	X	X	X	X	X	X	X	X	2001
KARAN	X	X	X	2001	X	X	2001	X	X	X
JENSON	X	X	2001	X	X	2001	X	X	2001	X

46. Hence Option (b) is the correct answer.

47. There is a choice of Engineering, Architecture and Management. Hence Option (d) is the correct answer.

48. No clear clue provided hence Option (d) is the correct answer.

Questions 49 to 51: The following solution table would emerge out of these clues.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Person	Ramesh	Suresh	Tanveer	Umesh	Vikram
Presentation topic	Chemistry	Dermatology	History	Mathematics	Biology

Hence, the answers are:

49. Monday. Option (b)

50. Biology. Option (d)

51. Thursday. Option (d)

Section 2

Verbal Reasoning

-
- Syllogisms
 - Logical Deductions
 - Set Theory, Venn Diagrams and Network Diagrams
 - Binary Logic
 - Critical Reasoning
-

Syllogisms

Q SYLLOGISMS—THEORY

Syllogisms can be defined as a deductive scheme under which a formal argument is made. It consists of a major and a minor premise, leading up to a conclusion.

For example, let us look at the following example:

Major Premise: Every crime is deplorable;

Minor Premise: Eve teasing is a crime;

Conclusion: Eve teasing is deplorable.

Questions based on Syllogisms always first state the premises and then ask you to derive the conclusion on the basis of the relationship existing between the different elements of the premises.

The best method for solving syllogisms involves the use of Venn Diagrams. We will first look at the main types of premises and then look in detail at the process to be used to solve questions of syllogisms.

Q PREMISES—VARIOUS PATTERNS

A premise is defined as a proposition antecedently supposed or proved as a basis of argument or inference. In other words: something assumed or taken for granted.

Type 1: All A's are B's (Or No A is not B):

There are two possible Venn diagrams for this situation. These are:

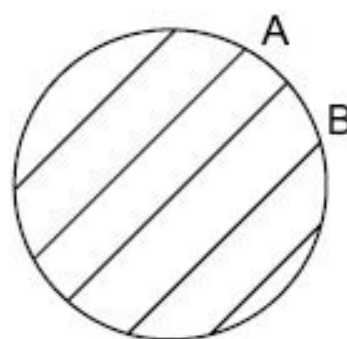
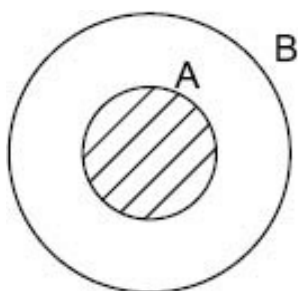


Fig. A**Fig. B**

The following reactions to the premise *All A's are B's* are valid:

- (a) *Some B's are A's*. This is a definite conclusion.

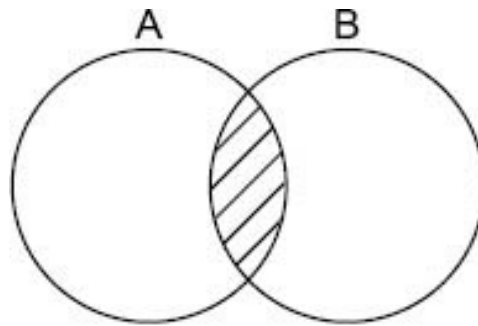
This is true in both Figures A and B.

- (b) *Some B's are not A's*. This is a probable conclusion and will occur only if the conclusion *All B's are A's* is not true.

Hence, it can be stated that if *All A's are B's*, then either *All B's are A's* (No B is Not A) or *Some B's are not A's*. As can be seen in the figures above, either *Some B's are not A's* (Figure A) or *All B's are A's* (as seen in Figure B).

Type 2: Some A's are B's

This premise is represented by the following figure:

**Fig. A**

The valid reaction to this premise is:

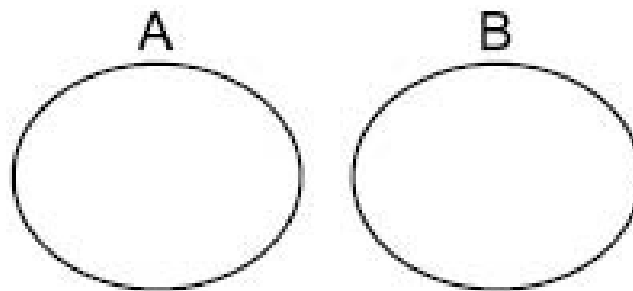
Some B's are A's

This is a definite conclusion (as can be seen clearly in figure A above.)

Although the above figure also supports the conclusion —some B's are not A's, this cannot be taken as a definite conclusion. This is because, when we say that *Some A's are B's*, it does not mean that there have to be some B's that are not A's.

Type 3: No A is B

This premise is represented by the following figure:

**Fig. A**

The conclusion *No B is A* is a valid conclusion.

Type 4: Some A's are not B's (Or All A's is not B's)

There could be three possible Venn Diagrams in this case, as shown below:

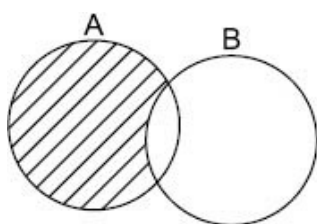


Fig. A

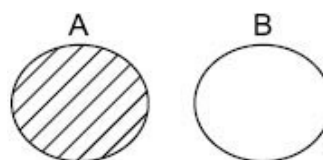


Fig. B

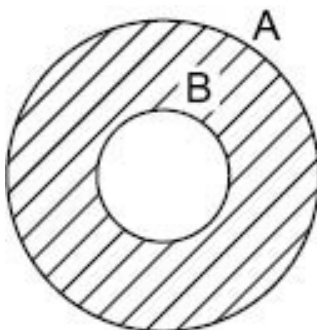


Fig. C

Q STANDARD PROCESS FOR SOLVING SYLLOGISM QUESTIONS

The most logical process of solving Syllogism questions is through Venn diagrams. The following examples will make the process clear:

SOLVED EXAMPLES

1. (A) All tigers lay eggs.
 (B) All cats lay eggs.
 (C) Some cats can fly.
 (D) All tigers cannot fly.
 (E) All tigers are cats.
 (F) All tigers cannot swim.
 (a) BEA
 (c) DEC

- (b) ABE
 (d) ECB

In the above question, it can be clearly seen that the sequence BEA is the most appropriate since if all cats lay eggs is true and it is also true that all tigers are cats, then it will also be true that all tigers lay eggs.

2. (A) Some curtains are cloth.
 (B) All cloth is wood.
 (C) All that is wood is cloth.
 (D) All cloth are curtains.

(E) All curtains are wood.

(F) Some curtains are wood.

(a) BED

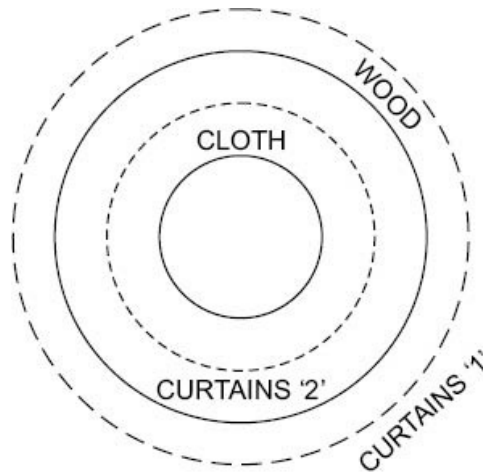
(b) BDF

(c) FAB

(d) FBA.

BDF is the most logical sequence here since if we take B and D as the premises, then the curtains which are cloth, will also be wood.

The Venn Diagram for BD will look like this—



Hence, F is the correct conclusion.

3. (A) All balls are tall.
(B) Some tall are dolls.
(C) Some dolls are balls.
(D) Some tall are not balls.
(E) All tall are dolls.
(F) No tall are dolls.

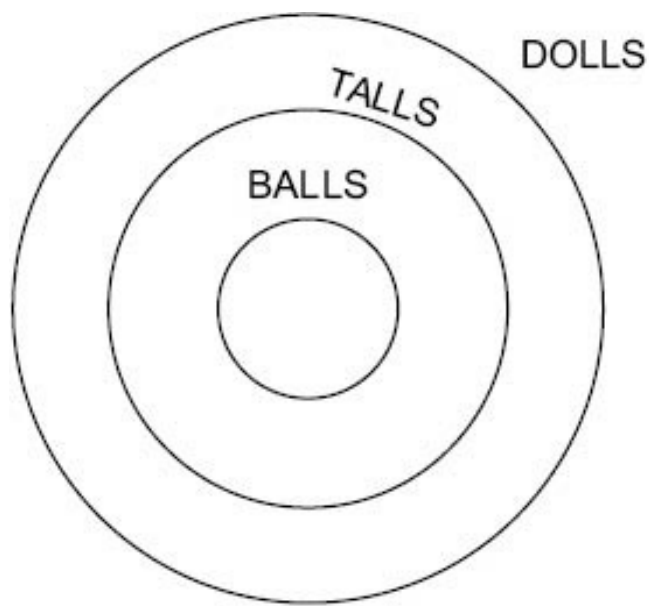
(a) EAC

(b) BCD

(c) ABC

(d) EDC

EA will give the following figure which will give C as the conclusion. Hence, the answer is (a).



4. (A) Some stone is bone.
 (B) All slipper is bone.
 (C) All bone is stone.
 (D) No stone is slipper.
 (E) No bone is stone.
 (F) Some bone is slipper.

(a) BCA

(b) AFE

(c) DEC

(d) CEA

(CAT 1996)

(A) is the obvious answer here, since if all bone is stone(C), then obviously, some stone is bone(A).

5. (A) No rice is a pest.
 (B) All pest is lice.
 (C) Some rice is lice.
 (D) All rice is pest.
 (E) All rice is lice.
 (F) No rice is lice.

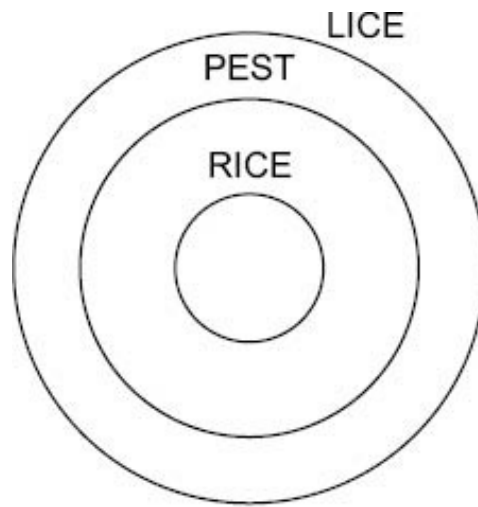
(a) BEF

(b) FCB

(c) ABF

(d) BDE

BDE will give the following Venn Diagram which makes E the correct conclusion for the premises BD.



6. For this question, you have to base your conclusion on the three premises (viz: a, b and c). Identify the correct answer from amongst the options given to you:

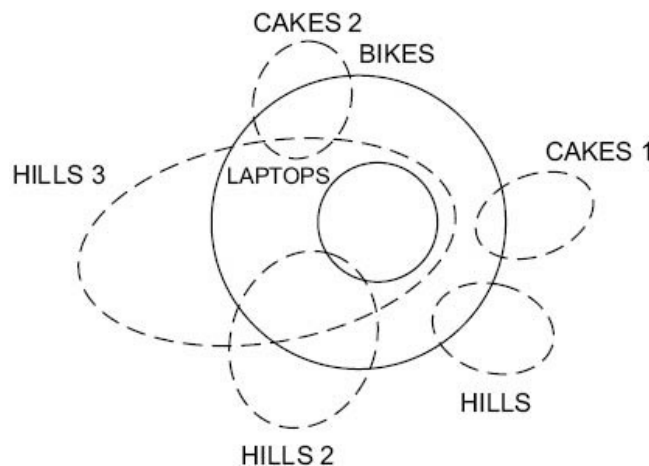
Statements

- a. Some cakes are bikes
- b. Some bikes are hills
- c. All laptops are bikes

Conclusions

- I. All laptops are hills
- II. Some laptops are cakes
- III. Some cakes are hills
- IV. Some laptops are not cakes
- (a) Only I follows
- (b) Only either II or IV follows
- (c) Only I or III follow
- (d) Only I and IV follows
- (e) None of these

For the question above, the following Venn Diagram can be drawn:

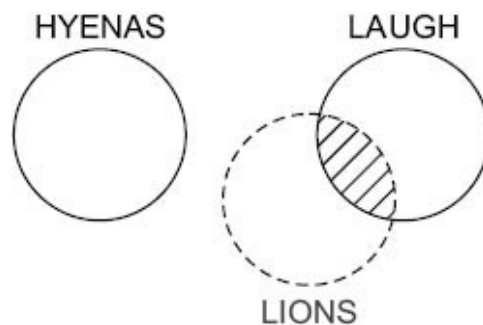


It is clear from the figure that the conclusion 'All Laptops are Hills' does not hold. Similarly, some Cakes are hills is also not necessarily true. If we take a look at II & IV, we can

conclude that one of them has to be true. Hence, the answer is (b).

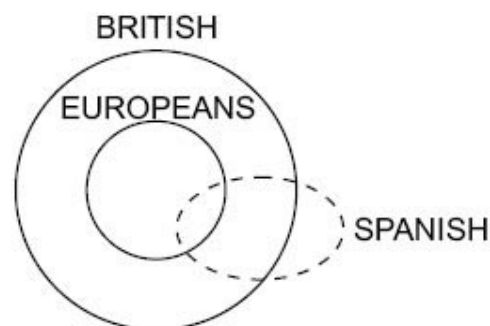
7. (A) No hyenas laugh. Some who laugh are lions. Some lions are not hyenas.
 (B) All ghosts are red. Some ghosts do not dance. Some dancers are not red.
 (C) Australians indulge in swearing. Those who swear are fined. Some who are fined are not Australians.
 (D) Some Europeans are Spanish. All Europeans are British. Some British are Spanish.
- (a) A and B (b) C only
 (c) A and D (d) D only

The following Venn Diagram can be made for the sequence A:



Obviously, the lions who laugh are not hyenas. Hence, the conclusion is justified.

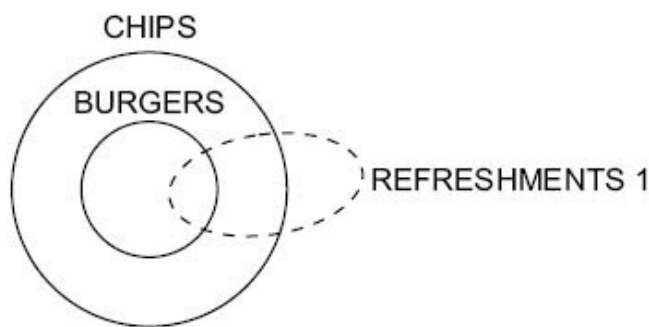
The following Venn Diagram will be made for the sequence D:



It is obvious that whatever circle we draw for Spanish (apart from the one shown) it will have to intersect the circle for Europeans. This in effect, means that, it has also to intersect with the British circle. Hence, the conclusion that 'Some British are Spanish' is justified.

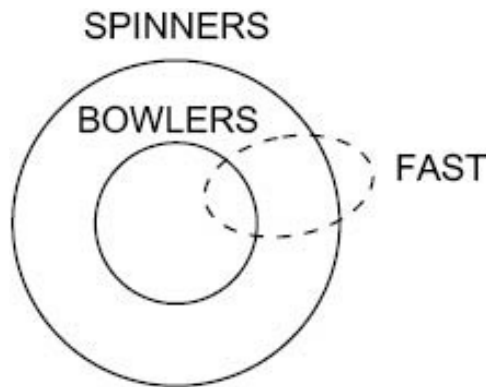
8. (A) All Pakistanis are brave. All baskets are Pakistanis: All brave are baskets.
 (B) No golfers are Asian. All golfers are athletic. Some Asians are pros.
 (C) All burgers are chips. Some refreshments are burgers. Some refreshments are chips.
 (D) Some bowlers are fast. All bowlers are spinners. Some spinners are fast.
- (a) C and D (b) B and C
 (c) A only (d) C only

The following Venn Diagram can be made for the sequence C:



The conclusion for C is justified in exactly the same way as the one for the sequence D of Solvec Example 7.

The following Venn Diagram can be made for sequence D:



As is clear from the diagram above, the conclusion is justified on the basis of the same logic as for the last two diagrams.

PRACTICE EXERCISES

Type 1

Directions for Questions 1 to 10: In each of the questions below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements as true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follow(s) from the given statements, disregarding commonly known facts.

Give answers (a) *if only conclusion I follows.*

(b) *if only conclusion II follows.*

(c) *if either I or II follows.*

(d) *if neither I nor II follows*

(e) *if both follow*

1. **Statements:** (A) All cats are dogs.
(B) All dogs are brown.

Conclusions: I. All cats are brown.
II. All brown are dogs.

2. **Statements:** (A) All computers are pentiums.

(B) Some pentiums are machines.

Conclusions:

I. Some computers are machines.

II. Some machines are computers.

3. **Statements:**

(A) Some apples are fruit.

(B) Some fruits are sour.

Conclusions:

I. Some apples are sour.

II. Some sours are fruit.

4. **Statements:**

(A) Some rods are sticks.

(B) Some scales are rods.

Conclusions:

I. Some sticks are rods.

II. Some scales are sticks.

5. **Statements:**

(A) Architects marry only fair girls.

(B) Bimla is very fair.

Conclusions:

I. Bimla was married to an Architect.

II. Bimla was not married to an Architect.

6. **Statements:**

(A) Sehwag is a good batsman.

(B) Batsmen are physically powerful.

Conclusions:

I. All physically powerful are Batsmen.

II. Sehwag is physically powerful.

7. **Statements:**

(A) Some cats are white.

(B) Milk is white.

Conclusions:

I. Some cat is milk.

II. Some white is milk.

8. **Statements:**

(A) All pens are long.

(B) All pencils are long.

Conclusions:

I. All pens are pencils.

II. Some pens are pencils.

9. **Statements:**

(A) All resorts have scenery.

(B) Mahabaleshwar is a resort.

Conclusions:

I. Mahabaleshwar has scenery.

II. Places other than resorts don't have scenery.

10. **Statements:**

(A) All teenagers go to cinema.

(B) Raveesh doesn't go to cinema.

Conclusions:

I. Raveesh is not a teenager.

II. Going to cinema is not essential to be a teenager.

Type 2

Directions for Questions 11 to 40: In each of the questions below are given three statements followed by four conclusions numbered I, II, III and IV. You have to take the three given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follow(s) from the given statements disregarding commonly known facts.

11. **Statements:**

(A) Some apples are fruits.

(B) All vegetables are fruits.

(C) All fruits are vegetables.

Conclusions:

I. Some apples are vegetables.

II. All vegetables are fruits.

III. All fruits are apples.

IV. All vegetables are apples.

(a) Only I and II follow.

(b) Only II follows.

(c) Only I and IV follow.

(d) Only II and IV follow.

(e) None of these.

12. **Statements:**

(A) Some cars are four wheelers.

(B) All four wheelers are vehicles.

(C) Some vehicles are SUVs.

Conclusions:

I. Some SUVs are four wheelers.

II. Some vehicles are four wheelers.

III. Some vehicles are cars.

IV. Some SUVs are cars.

(a) All follow

(b) Only II & III follow

(c) Only III follows

(d) Either III or IV follows

(e) None of these

13. **Statements:** (A) All principals are men.
(B) Some women are principals.
(C) All humans are women.

Conclusions: I. All humans are men.
II. Some humans are principals.
III. Some men are principals.
IV. All women are men.

- (a) Only I follows
(b) Only II follows
(c) Only I and III follow
(d) Only III follows
(e) None of these

14. **Statements:** (A) Most architects are writers.
(B) No writer is a driver.
(C) All drivers are architects.

Conclusions: I. Some writers are architects.
II. All architects are drivers.
III. No driver is a writer.
IV. Some drivers are writers.

- (a) Only I follows
(b) Only II and III follow
(c) Only I and III follow
(d) Either III or IV follows
(e) None of these

15. **Statements:** (A) All registers are books.
(B) All books are written materials.
(C) All written materials are novels.

Conclusions: I. All books are novels.
II. All written materials are registers.
III. All registers are novels.
IV. All novels are books.

- (a) Only I and II follow

(b) Only II and III follow
(c) Only I and III follow

(d) All follow

(e) None of these

16. **Statements:** (A) Some cats are animals.
(B) Some animals are mammals.
(C) Some mammals are earthlings.

Conclusions: I. Some earthlings are cats.
II. Some mammals are cats.
III. Some earthlings are animals.
IV. Some cats are earthlings.

(a) None follow.

(b) All follow

(c) Only I and II follow

(d) Only II and IV follow

(e) Only III and IV follow

17. **Statements:** (A) No apple is mango.
(B) All mangoes are fruits.
(C) All fruits are vegetarian.

Conclusions: I. No fruit is apple.
II. No vegetarian is apple.
III. Some vegetarians are mango.
IV. Some vegetarians are apples.

(a) None follows

(b) All follow

(c) Either II or IV and III follow

(d) Either II or III and I follow

(e) None of these

18. **Statements:** (A) All pens are pencils.
(B) Some pencils are markers.
(C) All markers are ball points.

Conclusions: I. Some markers are pens.
II. Some ball points are pencils.

III. Some ball points are pens.

IV. Some pencils are pens.

- (a) None follows
- (b) Only I and III follows
- (c) All follows
- (d) Only II and IV follows
- (e) None of these

19. **Statements:**
- (A) Some dogs are cats.
 - (B) Some cats are hounds.
 - (C) Some hounds are animals.

Conclusions:

- I. Some animals are dogs.
- II. Some hounds are dogs.
- III. Some animals are cats.
- IV. No animals are cats.

- (a) None follows
- (b) Only III follows
- (c) Only either I or IV and III follows
- (d) Only either I or IV and II follows
- (e) None of these

20. **Statements:**
- (A) All leaves are fruits.
 - (B) No fruit is vegetable.
 - (C) All vegetables are panthers.

Conclusions:

- I. Some fruits are leaves.
- II. All fruits are leaves.
- III. Some panthers are vegetables.
- IV. All panthers are vegetables.

- (a) Only II and IV follow
- (b) Only either I or II follow
- (c) Only either III or IV follows
- (d) All follow
- (e) None of these

21. **Statements:**
- (A) Some panthers are cats.

- (B) All cats are mammals.
- (C) Some mammals are not panthers.

Conclusions:

- I. Some mammals are panthers.
- II. All panthers are mammals.
- III. All cats are panthers.
- IV. All mammals are panthers.

- (a) None follows
- (b) Only I follows
- (c) Only I and II follow
- (d) Only II and III follow
- (e) All follow

22. **Statements:**
- (A) Some young are boys.
 - (B) All boys are actors.
 - (C) Some actors are cars.

Conclusions:

- I. Some actors are young.
- II. Some cars are young.
- III. Some cars are boys.
- IV. Some boys are young.

- (a) None follows
- (b) Only IV follows
- (c) Only I follows
- (d) Both I and IV follow
- (e) None of these

23. **Statements:**
- (A) All actors are males.
 - (B) Some artists are males.
 - (C) All singers are artists.

Conclusions:

- I. Some artists are actors.
- II. Some singers are males.
- III. Some males are actors.
- IV. No singers are male.

- (a) Only either II or IV and III follow
- (b) Only either II or IV and I follow
- (c) Only either I or II and IV follow

(d) None follows

(e) None of these

24. **Statements:**
- (A) All cats are drakes.
 - (B) No drake is a mare.
 - (C) All mares are animals.

Conclusions:

- I. No cat is a mare.
- II. Some animals are mares.
- III. Some drakes are cats.
- IV. Some cats are mares.

- (a) All follow
- (b) Only either I or II and both III and IV follow
- (c) Only either I or IV and both II and III follow
- (d) Only either I or IV and II follow
- (e) None of these.

25. **Statements:**
- (A) Some cars are vehicles.
 - (B) Some vehicles are machines.
 - (C) Some machines are mechanics.

Conclusions:

- I. Some mechanics are machines.
- II. Some vehicles are cars.
- III. Some machines are cars.
- IV. Some mechanics are vehicles.

- (a) All follow
- (b) Only I and II follow
- (c) Only III and IV follow
- (d) Only I and IV follow
- (e) None follows

26. **Statements:**
- (A) All desks are boards.
 - (B) All boards are flat.
 - (C) All flats are white.

Conclusions:

- I. All whites are desks.
- II. All boards are white.
- III. Some whites are flat.

IV. Some flats are desks.

(a) All follows

(b) Only I, II and IV follow

(c) Only III and IV follow

(d) II, III and IV follow

(e) None of these

27. **Statements:** (A) Some opels are televisions.

(B) Some televisions are bulbs.

(C) All tubes are bulbs.

Conclusions: I. Some opels are tubes.

II. Some opels are bulbs.

III. No tube is opel.

IV. All bulbs are tubes.

(a) None follows

(b) Both III and II follow

(c) Only either II or III follows

(d) Only either I or III follows

(e) Only either I or IV follows

28. **Statements:** (A) Some trains are cars.

(B) All cars are rivers.

(C) Some roads are rivers.

Conclusions: I. Some rivers are trains.

II. Some roads are trains.

III. Some roads are cars.

IV. Some rivers are roads.

(a) IV follows

(b) Only I and II follow

(c) Only either I or III follows

(d) Only either II or III follows

(e) Only either I or IV follows

29. **Statements:** (A) All cats are Lions.

(B) Some lions are mice.

(C) All mice are giraffes.

Conclusions:

- I. Some mice are cats.
- II. Some giraffes are lions.
- III. Some giraffes are cats.
- IV. Some giraffes are mice.

- (a) Only I and II follow
- (b) Only I and III follow
- (c) Only II and III follow
- (d) Only III and IV follow
- (e) None of these

30. **Statements:**

- (A) All pencils are pens.
- (B) No pens are markers.
- (C) All markers are drawings.

Conclusions:

- I. No pencil is a marker.
- II. No pencil is a drawing.
- III. Some drawings are pens.
- IV. Some markers are pencils.

- (a) Only I follows
- (b) Only I and II follow
- (c) Only II and III follow
- (d) Only III and IV follow
- (e) None of these

31. **Statements:**

- (A) Some apples are flowers.
- (B) No flower is a papaya.
- (C) All papayas are baskets.

Conclusions:

- I. Some apples are baskets.
- II. Some baskets are papayas.
- III. Some baskets are apples.
- IV. Some flowers are apples.

- (a) All follow
- (b) None follows
- (c) Only II and IV follow
- (d) Only II and III follow

(e) None of these
32. **Statements:** (A) Some cars are horses.

(B) All horses are guns.

(C) All guns are cows.

Conclusions:

I. Some cows are cars.

II. Some cows are horses.

III. Some cows are guns.

IV. Some cars are guns.

(a) None follows

(b) Only I and II follow

(c) Only II and III follow

(d) Only III and IV follow

(e) All follow

33. **Statements:** (A) Some desks are apartments.

(B) All apartments are cars.

(C) Some cars are trucks.

Conclusions:

I. Some desks are trucks.

II. Some desks are cars.

III. Some cars are apartments.

IV. No truck is a desk.

(a) None follows

(b) Only II and III follow

(c) Either only I or II, III and IV follow

(d) Either only I or IV, and II and III follow

(e) All follow

34. **Statements:** (A) All cats are cows.

(B) All horses are cows.

(C) Some cows are bulls.

Conclusions:

I. Some cats are horses.

II. Some horses are bulls.

III. Some bulls are cats.

IV. All bulls are cows.

- (a) None follows
- (b) Only I follows
- (c) Only I and III follow
- (d) Only II and IV follow
- (e) All follow

35. **Statements:** (A) Some cats are elephants.

(B) No elephant is river.

(C) All rivers are roads.

Conclusions: I. No cat is river.

II. Some roads are rivers.

III. Some elephants are cat.

IV. Some cats are rivers.

- (a) Only I and II follow
- (b) Only II, III and IV follow
- (c) Only either I or IV and III follow
- (d) Only I, II and III follow
- (e) None of these

36. **Statements:** (A) All mirrors are phones.

(B) Some phones are gadgets.

(C) All gadgets are mirrors.

Conclusions: I. Some gadgets are phones.

II. Some gadgets are mirrors.

III. Some gadgets are not mirrors.

IV. Some mirrors are phones.

- (a) None follows
- (b) Only I and II follow
- (c) Only II and III follow
- (d) Either II or IV follows
- (e) None of these

37. **Statements:** (A) No proud is animal.

(B) Some sheeps are animals.

(C) All cats are sheeps.

Conclusions:

- I. No cat is proud.
- II. Some cats are animals.
- III. No animal is cat.
- IV. Some prouds are sheeps.

- (a) Only III follows
- (b) Only either II or III follows
- (c) Only I follows
- (d) Only I and either II or III follow
- (e) None of these

38. Statements:

- (A) All grapes are apples.
- (B) All papayas are apples.
- (C) Some apples are mangoes.

Conclusions:

- I. No grape is mango.
- II. Some papayas are not mangoes.
- III. Some grapes are papayas.
- IV. All mangoes are grapes.

- (a) Only I follows
- (b) Either I or III follows
- (c) Only II and III follow
- (d) Only I, II and III follow
- (e) None of these

39. Statements:

- (A) Some bats are rackets.
- (B) Some rackets are bats.
- (C) Some bats are balls.

Conclusions:

- I. Some balls are bats.
- II. Some balls are not bats.
- III. No racket is ball.
- IV. No bat is ball.

- (a) Only I and IV follow
- (b) Only II follows
- (c) Only I and III follow
- (d) Only I or IV follows

(e) None of these.
40. **Statements:**

- (A) All stereos are cds.
- (B) Some stereos are cassettes.

Conclusions:

- (C) Some cds are pens.
- I. Some pens are stereos.
- II. Some cds are cassettes.
- III. Some pens are cassettes.
- IV. All stereos are pens.

- (a) Either I or IV follows
- (b) Only II and III follow
- (c) Either I or IV and II follow
- (d) Only II follows
- (e) None of these.

41. **Statements:**

- (A) Some sacks are backs.
- (B) All backs are bones.
- (C) No bone is muscle.

Conclusions:

- I. Some sacks are not muscles.
- II. Some sacks are not bones.
- III. All sacks are bones.
- IV. No sack is muscle.

- (a) Only I follows
- (b) None follows
- (c) Only IV follows
- (d) I and either II or III follow
- (e) None of these.

42. **Statements:**

- (A) All rackets are jackets.
- (B) No cow is cat.
- (C) Only cats are dogs.

Conclusions:

- I. Some rackets are not cats.
- II. Some cats are jackets.
- III. Some rackets are cats.
- IV. No dog is a cow.

- (a) Only either I or II and IV follow
- (b) Only II and IV follow
- (c) Only III and IV follow
- (d) Only I and IV follow
- (e) None of these.

43. **Statements:**
- (A) All stairs are lifts.
 - (B) No lift is an escalator.
 - (C) Some escalators are helicopters.
 - (D) Some lifts are planes.
- Conclusions:**
- I. No stairs is an escalator.
 - II. Some helicopters are not escalators.
 - III. Some stairs are planes.
 - IV. Some helicopters are escalators.

- (a) Only I and either II or IV follow
- (b) Only I and IV follow
- (c) Either II or IV follows
- (d) Only I, III or IV follows
- (e) None of these.

44. **Statements:**
- (A) All boxes are cartons.
 - (B) All cartons are packages.
 - (C) Some packages are letters.
 - (D) No box is a parcel.
- Conclusions:**
- I. All boxes are packages.
 - II. Some boxes are not cartons.
 - III. All packages are letters.
 - IV. Some packages are not letters.

- (a) Only I and either III or IV follow
- (b) Only I, II and either III or IV follow
- (c) Only I and II follow
- (d) Only I follows
- (e) None of these.

45. **Statements:**
- (A) Most bulls are cows.
 - (B) No bull is horse.

(C) All horses are cows.

Conclusions:

I. Some cows are not horses.

II. All cows are not horses.

III. Some bulls are cows.

IV. Some bulls are not horses.

(a) Only II, III and IV follow

(b) Either I or II and III and IV follow

(c) Only I, III and IV follow

(d) All follow

(e) None of these.

46. **Statements:**

(A) Many perfumes are diamonds.

(B) All aspirins are powder.

(C) No perfume is powder.

Conclusions:

I. Some diamonds are not powders.

II. Some diamonds are powders.

III. No aspirins are perfume.

IV. Some diamonds are not aspirins.

(a) Only I, III and IV follow

(b) Either I or II and III and IV follow

(c) Only III and IV follow

(d) Only I and IV follow

(e) None of these.

47. **Statements:**

(A) All bulls are bells.

(B) Some bulls are cows.

(C) Some bells are chairs.

Conclusions:

I. Some cows are chairs.

II. Some bells are bulls.

III. All bells are cow.

IV. All bells are bulls.

(a) All follow

(b) None follows

(c) Only II follows

- (d) Only II and III follow
- (e) None of these.

48. **Statements:** (A) Some cakes are bikes.
(B) Some bikes are hills.

(C) All laptops are bikes.

Conclusions: I. All laptops are hills.
II. Some laptops are cakes.
III. Some cakes are hills.
IV. Some laptops are not cakes.

(a) Only I follows

(b) Only either II or IV follows

(c) Only I or III follows

(d) Only I and IV follows

(e) None of these.

49. **Statements:** (A) Some pots are pans.
(B) Some pans are cookers.
(C) Some cookers are rafts.

Conclusions: I. Some rafts are pans.
II. Some cookers are pots.
III. Some rafts are pans.
IV. Some pots are cookers.

(a) All follow

(b) None follows

(c) Only I and III follow

(d) Only II and IV follow

(e) None of these.

50. **Statements:** (A) Most chairs are tables.
(B) No chairs are trolleys.
(C) All trolleys are tables.

Conclusions: I. Some tables are not trolleys.
II. All tables are not trolleys.
III. Some chairs are tables.

- IV. Some chairs are not trolleys.
- (a) Only II, III and IV follow
 - (b) Either I or II, III and IV follow
 - (c) Only I, III and IV follow
 - (d) All follow
 - (e) None of these.

Type 3

Directions for Questions 51 to 70: Each question contains six statements, followed by four options of combinations of any three of the given sentences. Choose the option in which the combinations are logically related.

51. (A) All Martians eat sausages.
(B) All those who eat sausages are not Martians.
(C) All those who eat sausages are herbivorous.
(D) All Martians are carnivorous.
(E) All those who eat sausages are carnivorous.
(F) Martians are herbivorous.
- | | |
|---------|---------|
| (a) BCE | (b) ABE |
| (c) ACD | (d) ACF |
52. (A) All lotuses have flowers.
(B) All lotuses have nectar.
(C) All plants with nectar have flowers.
(D) All shrubs have lotuses.
(E) All shrubs have nectar.
(F) Some lotuses have flowers.
- | | |
|---------|---------|
| (a) BEF | (b) BCF |
| (c) BDE | (d) ACF |
53. (A) No summer is a season.
(B) Some seasons are summers.
(C) Some seasons are winters.
(D) No seasons are winters.
(E) Some summers are not winters.
(F) All summers are winters.
- | | |
|---------|---------|
| (a) DFA | (b) BEF |
|---------|---------|

(c) CEB

(d) DEB

54. (A) All falcons fly high.
(B) All falcons are blind.
(C) All falcons are birds.
(D) All birds are yellow.
(E) All birds are thirsty.
(F) All falcons are yellow.

(a) ABC

(b) CDF

(c) DEF

(d) BCA

55. (A) No nails are wires.
(B) Some hooks are wires.
(C) All hooks are nails.
(D) Some wires are not nails.
(E) No wire is a hook.
(F) All nails are hooks.

(a) AED

(b) BCF

(c) BEF

(d) ACE

56. (A) Some dabba are cobra.
(B) All dabba are chabi.
(C) All cobra are dabba.
(D) All cobra are not dabba.
(E) Some chabi are dabba.
(F) Some chabi are cobra.

(a) AEF

(b) BCF

(c) ABD

(d) BCE

57. (A) No train is a claim.
(B) All heads are claims.
(C) No head is a train.
(D) Some heads are not trains.
(E) Some trains are heads.
(F) Some claims are not trains.

(a) ACD

(b) ADF

58. (A) ^{(c) ABC} All balls are Barbie. (d) CDF
 (B) All bats are Barbie.
 (C) All bats are balls.
 (D) Some bats are Barbie.
 (E) Some Barbie are balls.
 (F) No ball is Barbie.
 (a) CDE (b) CEF
 (c) ACD (d) BEF
59. (A) Some apartments are not multistories.
 (B) Some multistories are not apartments.
 (C) No house is a skyscraper.
 (D) All multistories are houses.
 (E) Some multistories are apartments.
 (F) Some houses are not apartments.
 (a) ACE (b) BDF
 (c) FDA (d) ACF
60. (A) All bows are arrows.
 (B) No arrow is a casket.
 (C) No bow is a casket.
 (D) Some caskets are arrows.
 (E) Some bows are caskets.
 (F) No casket is a bow.
 (a) BDE (b) ACB
 (c) CDF (d) ABF
61. (A) Some soaps are not shampoos.
 (B) Some shampoos are not soaps.
 (C) No oil is shampoo.
 (D) All shampoos are oils.
 (E) Some shampoos are soaps.
 (F) Some who are oils are not soaps.
 (a) ACF (b) DEF
 (c) ABC (d) BDF

62. (A) Some humans are late.

(B) All humans are bad.

(C) All late things are humans.

(D) All late things are bad.

(E) Some bad things are humans.

(F) Some bad things are late.

(a) AFE

(b) BCF

(c) BCA

(d) BCE

63. (A) All Shomes are bright.

(B) No bright Shomes are Bands.

(C) Some Shomes are Bands.

(D) Some Bands are bright.

(E) No Tom is a Band.

(F) No Band is a Shome.

(a) ABC

(b) BEF

(c) ABF

(d) CDA

64. (A) All sorcerors are hasty.

(B) Some daredevils are hasty.

(C) All sorcerors are daredevils.

(D) All daredevils are hasty.

(E) Some hasty are daredevils.

(F) No sorcerer is pasty.

(a) BCD

(b) CDA

(c) DEC

(d) FEC

65. (A) No mango is a lingo.

(B) All tangos are lingos.

(C) No tango is a mango.

(D) Some tangos are not mangoes.

(E) Some mangoes are tangos.

(F) Some lingos are not mangoes.

(a) ABC

(b) ACB

(c) DFA

(d) BDA

66. (A) Some irons are made of steel.
 (B) All steel is made of copper.
 (C) All copper is used for making irons.
 (D) Some steel is copper.
 (E) Some irons are used for steel.
 (F) Some copper is used for steel.
- (a) ABC (b) CEF
 (c) CDA (d) ABE
67. (A) No tiger is carnivorous.
 (B) All animals are carnivorous.
 (C) Cats are carnivorous.
 (D) No cat is a tiger.
 (E) No tiger is an animal.
 (F) All cats are animals.
- (a) ADC (b) ABE
 (c) FBA (d) AFC
68. (A) No brother is a pro.
 (B) Some pros like to work.
 (C) No Indian is rude.
 (D) Some rude are pros.
 (E) Some pro are Indians.
 (F) All Indians like to work.
- (a) ABE (b) CED
 (c) FEB (d) BEF
69. (A) Apples are fruits.
 (B) All apples are pears.
 (C) Some fruits are pears.
 (D) Some apples are pears.
 (E) All fruits are sweet.
 (F) Some pears are sweet.
- (a) DAC (b) CDA
 (c) BCA (d) EFC
70. (A) Santros are RIMs.

- (B) Santos are cars.
- (C) RIMs are cars.
- (D) Fords are cars.
- (E) RIMs are Fords.
- (F) Fords are stable.

(a) ACB

(b) FED

(c) CEA

(d) ABC

Type 4

Directions for Questions 71 to 75: Each question contains four arguments of three sentences each. Choose the set in which the third statement is a logical conclusion of the first two.

71.

- I. Some Xs are Ps. Some Ps are Ys. Some Xs are Ys.
- II. All Chandis are beautiful. Some beautiful are crazy. Some Chandis are crazy.
- III. No belief is strong. Only strong have muscles. No belief has muscles.
- IV. All orangutans are men. Some men are strong. Some orangutans are strong.

(a) I and IV

(b) III only

(c) IV only

(d) None of these

72.

- I. Some bikes are mopeds. All mopeds are scooters. Some bikes are scooters.
- II. All children are hairs. No hairs are red. No children are red.
- III. No pencil is pen. Some pens are markers. Some pencils are markers.
- IV. Every man has a wife. All wives are devoted. No devoted has a husband.

(a) I, II and III

(b) I and II

(c) III and II

(d) I, II and III and IV

73.

- I. No moon is not red. All stars are moon. All stars are red.
- II. All doors are open. No open is outdoors. All doors are not outdoors.
- III. No Japanese can fire. All Chinese are books. Japanese and Chinese can fight.
- IV. No A is B. No B is C. No A is C.

(a) I only

(b) II only

(c) I & II only

(c) IV only

74.

- I. All envelopes are rectangles. All rectangles are rectangular. All envelopes are rectangular.
- II. Some thin are smart. Some smart things are tiny. Some thin are tiny.
- III. Learneds are well read. Well read know. Learneds know.
- IV. Dieting is good for health. Health foods are rare. Dieting is rare.
- (a) IV only (b) III only
- (c) Both I and III (d) All of these

75.

- I. Shahrukh is an actor. Some actors are pretty. Shahrukh is pretty.
- II. Some executives are soldiers. All soldiers are patriotic. Some executives are patriotic.
- III. All cricketers are patriotic. Some executives are soldiers. Some executives are patriotic.
- IV. All actors are pretty. Shahrukh is not an actor. Shahrukh is not pretty.
- (a) IV only (b) II only
- (c) I only (d) II and III

Answer Key

1. (a)	2. (d)	3. (c)	4. (d)
5. (c)	6. (b)	7. (d)	8. (d)
9. (a)	10. (a)	11. (a)	12. (b)
13. (d)	14. (c)	15. (c)	16. (a)
17. (c)	18. (d)	19. (a)	20. (e)
21. (b)	22. (d)	23. (e)	24. (e)
25. (e)	26. (d)	27. (a)	28. (a)
29. (d)	30. (a)	31. (c)	32. (e)
33. (d)	34. (a)	35. (d)	36. (b)
37. (b)	38. (e)	39. (d)	40. (d)
41. (d)	42. (a)	43. (b)	44. (a)
45. (c)	46. (a)	47. (c)	48. (b)
49. (b)	50. (d)	51. (d)	52. (c)
53. (a)	54. (b)	55. (d)	56. (b)

57. (c)	58. (a)	59. (b)	60. (d)
61. (d)	62. (b)	63. (c)	64. (b)
65. (a)	66. (c)	67. (b)	68. (c)
69. (a)	70. (a)	71. (b)	72. (b)
73. (c)	74. (c)	75. (b)	

Logical Deduction

As the name itself suggests, logical deduction questions require logical thinking. Every question starts off with a premise which might be of any one of the following types:

🕒 LOGICAL DEDUCTIONS PREMISES— VARIOUS PATTERNS

Type 1: If A Happens B Happens

This means that A leads to B, but does not mean the reverse, i.e., if B has happened, A must have happened. In such situations, A is a sufficient condition for B, but is not a necessary condition.

Let's look at the following example:

🌀 If I go to a movie, I enjoy myself.

🌀 This would mean, that if I have gone to the movie, I will definitely enjoy myself. However, it does not mean that if I have enjoyed myself, I must have gone to the movie—there are so many ways of enjoying yourself.

Another example of this type would be:

🌀 If Amitabh acts in a movie, he will earn money.

🌀 This does not mean that if he has earned money, he must have acted in the movie.

Type 2: Only If A Happens B Happens

In this case, A is a necessary and sufficient condition for the occurrence of B. In this case, there is reversibility of the logic, i.e., if B has happened, A must have happened.

🌀 Only if Saurav plays the match, will he get a hundred.

🌀 If Saurav has got a hundred, he must have played the match.

Type 3: If A Happens B does not Happen

In this case, if A has happened, B does not happen. The opposite is also true, i.e., if B has happened,

A must not have happened.

 If Martina plays well, Sania will not win.

Type 4: If A does not Happen B will Happen

Again in this case, the reverse might not be true.

 If Anand does not come, Kasparov will. This does not mean that if Kasparov comes, Anand will not come.

Type 5: Either A or B will Happen

One of the two has to happen. At the same time, the two events are exclusive of one another. If one happens, the other will not happen.

 Either he becomes a TV star or he becomes a movie star.

Let us look at a few solved examples:

 1. Shahrukh either acts as a villain, or he acts as a hero.

- A. Shahrukh acts like a hero.
- B. Shahrukh does not act like a villain.
- C. Shahrukh acts like a villain.
- D. Shahrukh does not act like a hero.

(a) CD only

(b) BA only

(c) CD & BA

(d) None of these

 This question is based on an EITHER-OR Premise. Thus, we can see that CD is correct. Since, he acts like a villain—(Statement C) he will not act like a hero (Statement D). Similarly, BA can also be seen to be true. Hence option (c) is correct.

 2. Whenever Martin goes to a movie, he has nightmares.

- A. Martin did not have nightmares.
- B. Martin went to a movie.
- C. Martin had nightmares.
- D. Martin did not go to the movie.

(a) AD

(b) DC

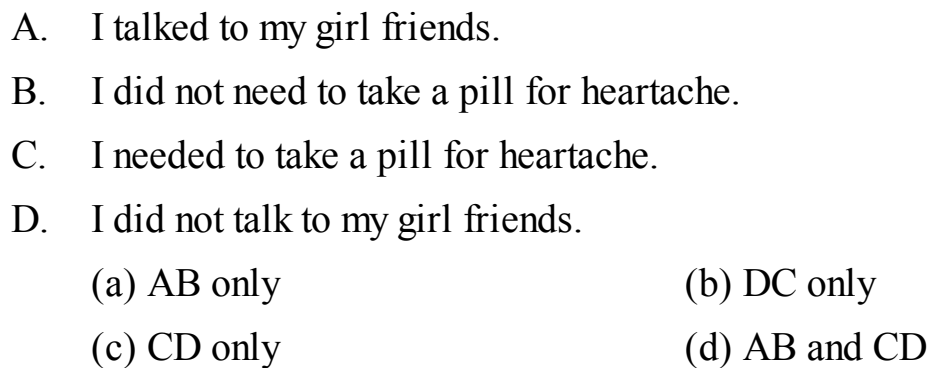
(c) CB

(d) DA

 When A happens, B happens. However, if A does not happen, it is not necessary that B will not happen. Also, if B has happened, it is not necessary that A must have happened. However, if B has not happened, it is necessary that A must not have happened.

Thus, AD is the only correct sequence.

3. If I talk to my girl friends, then I do not need to take a pill for heartache.



AB and CD are both logically correct.

Directions for Questions 1 to 30: Each question has a main statement, followed by four statements labelled A, B, C, and D. Choose the ordered pair of statements, where the first statement implies the second, and the two statements are logically consistent with the main statement.

- (A) I got a chocolate.
(B) I didn't get a chocolate.
(C) I didn't visit the restaurant.
(D) I visited the restaurant.
- (a) I (b) BD
(c) DA (d) AC

- (A) I got a flower.
- (B) I felt loved.
- (C) I didn't get a flower.
- (D) I didn't feel loved.
- (a) BA (b) BC
- (c) CD (d) DC

- (A) I played.
- (B) I didn't play.
- (C) I wore a cap.

(D) I didn't wear a cap.

(a) BD

(b) CA

(c) DB

(d) AD

4. I feel happy every time I see an innovation.

(A) I didn't see an innovation.

(B) I saw an innovation.

(C) I felt happy.

(D) I didn't feel happy.

(a) BC

(b) AD

(c) CB

(d) CD

5. If you once visit the USA, you become addicted to its openness.

(A) I visited the USA.

(B) I didn't get addicted to the USA's openness.

(C) I got addicted to the USA's openness.

(D) I didn't visit the USA.

(a) BD

(b) DB

(c) CA

(d) AB

6. Whenever the villain makes an entry, the viewers boo.

(A) The villain made an entry.

(B) The viewers didn't boo.

(C) The villain didn't make an entry.

(D) The viewers booed.

(a) BC

(b) CB

(c) DA

(d) None of these

7. I get cold feet whenever I see an examination paper.

(A) I saw an examination paper.

(B) I didn't see an examination paper.

(C) I got cold feet.

(D) I didn't get cold feet.

(a) CA

(b) BD

(c) DB

(d) BC

8. I remember her every time I see her photograph.

(A) I remembered her.
(B) I saw her photograph.

(C) I didn't see her photograph.

(D) I didn't remember her.

(a) CD

(b) DC

(c) AB

(d) None of these

9. Whenever Devdas comes, Paro sings.

(A) Paro is singing.

(B) Devdas has come.

(C) Devdas hasn't come.

(D) Paro is not singing.

(a) AB

(b) BA

(c) BC

(d) CD

10. Every player will become a champ.

(A) Rajesh is a player.

(B) Rajesh will become a champ.

(C) Rajesh is not a player.

(D) Rajesh will not become a champ.

(a) AD

(b) DA

(c) CD

(d) DC

11. You can see the star only if you go to the cinema.

(A) I went to the cinema.

(B) I didn't see the star.

(C) I saw the star.

(D) I didn't go to the cinema.

(a) BD

(b) DB

(c) AB

(d) CD

12. You can find Chinese toys only in China.

(A) I didn't find Chinese toys.

(B) I found Chinese toys.

(C) I went to the fair.

(D) I didn't go to China.

(a) CD

(b) CB

(c) CA

(d) AD

13. I will marry Vandana only if she wears my ring.

(A) I married Vandana.

(B) Vandana wore my ring.

(C) I could not marry Vandana.

(D) Vandana didn't wear my ring.

(a) BA

(b) BC

(c) DC

(d) CD

14. Only in Africa, can you see the African elephant.

(A) You went to Africa.

(B) You didn't go to Africa.

(C) You saw the African elephant

(D) You didn't see the African elephant.

(a) AC

(b) DB

(c) AD

(d) BD

15. You cannot clear the CAT unless you are intelligent.

(A) You are intelligent.

(B) You can clear the CAT.

(C) You are not intelligent.

(D) You cannot clear the CAT.

(a) BD

(b) AC

(c) CD

(d) AB

16. Martina wins the tournament provided she plays the final.

(A) Martina played the final.

(B) Martina won the tournament.

(C) Martina did not win the tournament.

(D) Martina did not play the final.

(a) AB

(b) BA

(c) CD

(d) AC

17. You can drive over 100 kmph only on the freeway.

(A) You are on the freeway.

(B) You cannot drive over 100 kmph.

(C) You can drive over 100 kmph.

(D) You are not on the freeway.

(a) DB

(b) AC

(c) BD

(d) AB

18. The exam is either CAT or XAT.

(A) The exam is CAT.

(B) The exam is not CAT.

(C) The exam is XAT.

(D) The exam is not XAT.

(a) AB

(b) CD

(c) BA

(d) BC

19. Mr. Condoleeni is either an engineer or a doctor.

(A) Mr. Condoleeni is an engineer.

(B) Mr. Condoleeni is not a doctor.

(C) Mr. Condoleeni is not an engineer.

(D) Mr. Condoleeni is a doctor.

(a) AB

(b) AD

(c) DA

(d) BC

20. Every inhabitant of the planet is either male or female. Given M is an inhabitant of the planet.

(A) M is male.

(B) M is female.

(C) M is not male

(D) M is not female.

(a) AB

(b) CD

(c) AC

(d) BC

21. Either Shravan is sick; or he is stoned.

(A) Shravan is sick.

(B) Shravan is not sick.

(C) Shravan is stoned.

(D) Shravan is not stoned.

(a) AB

(b) DA

(c) AC

(d) CD

22. Whenever Shyam hears of an exam, he loses sleep.

(A) Shyam heard of an exam.

(B) Shyam did not hear of the exam

(C) Shyam lost sleep.

(D) Shyam did not lose sleep.

(a) CA

(b) BD

(c) DB

(d) AD

23. Either the bus is late; or it has turned turtle.

(A) The bus is late.

(B) The bus is not late.

(C) The bus has turned turtle.

(D) The bus has not turned turtle.

(a) AB

(b) DB

(c) CA

(d) BC

24. When I see a horror movie I have a bad dream.

(A) I saw a horror movie.

(B) I did not see a horror movie.

(C) I did not have a bad dream.

(D) I had a bad dream.

(a) CB

(b) AD

(c) BC

(d) AC

25. Either Veronica is indisposed or she is sad.

(A) Veronica is not indisposed.

(B) Veronica is not sad.

(C) Veronica is indisposed.

(D) Veronica is sad.

(a) AB

(b) AD

(c) BA

(d) DA

26. Ravan gets a mild flu whenever he eats ice creams.

(A) Ravan gets a mild flu.

(B) Ravan does not eat ice creams.

(C) Ravan does not get a mild flu.

(D) Ravan eats ice creams.

- (a) AB (b) DC
(c) AC (d) BC
27. Either they have no confidence in the management or they are irritable.
(A) They are irritable.
(B) They are not irritable.
(C) They have confidence in the management.
(D) They have no confidence in the management.
(a) BA (b) CB
(c) DA (d) BD
28. Whenever Vijay reads late into the night, his grandfather reprimands him.
(A) His grandfather does not reprimand Vijay.
(B) Vijay reads late into the night.
(C) Vijay reads early in the morning.
(D) Vijay's grandfather reprimands him in the morning.
(a) CD (b) BD
(c) AB (d) None of the above
29. All irresponsible bosses shout if their workers do not fall in line.
(A) All irresponsible bosses do not shout.
(B) Workers fall in line.
(C) Workers do not fall in line.
(D) All irresponsible bosses shout.
(a) AB (b) BA
(c) CA (d) All of the above
30. Either Aamir is angry, or he shows mock anger.
(A) Aamir shows mock anger.
(B) Aamir is angry.
(C) Aamir does not show mock anger.
(D) Aamir is not angry.
(a) CB only (b) DA only
(c) BA only (d) CB and DA

1. (c)	2. (d)	3. (c)	4. (a)
5. (a)	6. (a)	7. (c)	8. (b)
9. (b)	10. (d)	11. (b)	12. (d)
13. (c)	14. (d)	15. (c)	16. (b)
17. (a)	18. (d)	19. (a)	20. (d)
21. (a)	22. (a)	23. (d)	24. (a)
25. (b)	26. (d)	27. (b)	28. (d)
29. (a)	30. (d)		

Set Theory, Venn Diagrams and Network Diagrams

Logical diagrams based situations have their own importance in the context of preparing for any aptitude examination. There are three major types of questions based on diagrams —

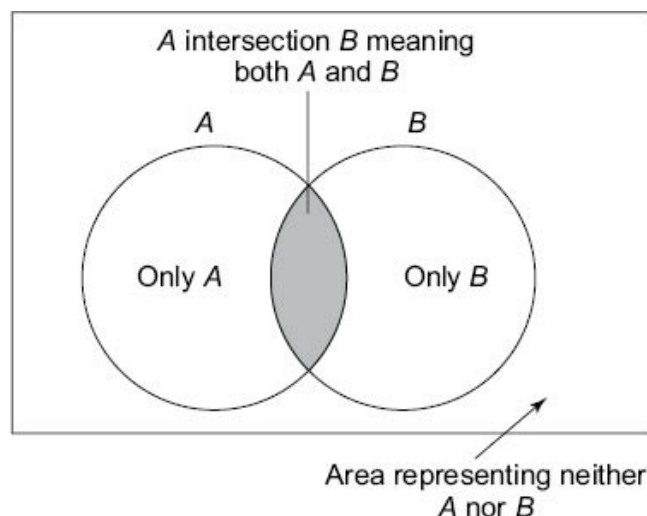
- (i) Numerical questions on set theory based on venn diagrams
- (ii) Logical questions based on set theory
- (iii) Questions based on network diagrams.

Let us first take a look at some standard theoretical inputs related to set theory.

SET THEORY

Look at the following diagrams:

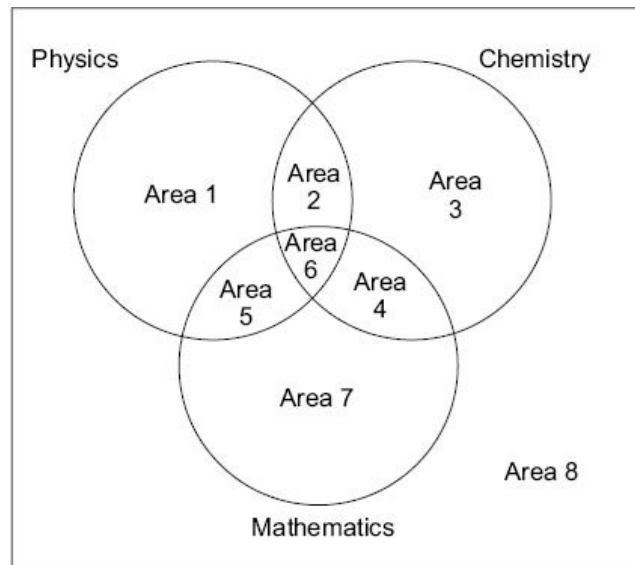
Figure 1: Refers to the situation where there are two attributes A and B. (Let's say A refers to people who passed in Physics and B refers to people who passed in Chemistry.) Then the shaded area shows the people who passed both Physics and Chemistry.



In mathematical terms, the situation is represented as:

Total number of people who passed at least 1 subject = $A + B - A \cap B$

Figure 2: Refers to the situation where there are three attributes being measured. In the figure below, we are talking about people who passed Physics, Chemistry and/or Mathematics.



In the above figure, the following explain the respective areas:

Area 1: People who passed in Physics only

Area 2: People who passed in Physics and Chemistry only (in other words—people who passed Physics and Chemistry but not Mathematics)

Area 3: People who passed Chemistry only

Area 4: People who passed Chemistry and Mathematics only (also, can be described as people who passed Chemistry and Mathematics but not Physics)

Area 5: People who passed Physics and Mathematics only (also, can be described as people who passed Physics and Mathematics but not Chemistry)

Area 6: People who passed Physics, Chemistry and Mathematics

Area 7: People who passed Mathematics only

Area 8: People who passed in no subjects

Also take note of the following language which there is normally confusion about:

People passing Physics and Chemistry—Represented by the sum of areas 2 and 6

People passing Physics and Maths—Represented by the sum of areas 5 and 6

People passing Chemistry and Maths—Represented by the sum of areas 4 and 6

People passing Physics—Represented by the sum of the areas 1, 2, 5 and 6

In mathematical terms, this means:

Total number of people who passed at least 1 subject =

$$P + C + M - P \ll C - P \ll M - C \ll M + P \ll C \ll M$$

Let us consider the following questions and see how these figures work in terms of real time problem solving:

ILLUSTRATION 1

At the birthday party of Sherry, a baby boy, 40 persons chose to kiss him and 25 chose to

shake hands with him. 10 persons chose to both kiss him and shake hands with him. How many persons turned out at the party?

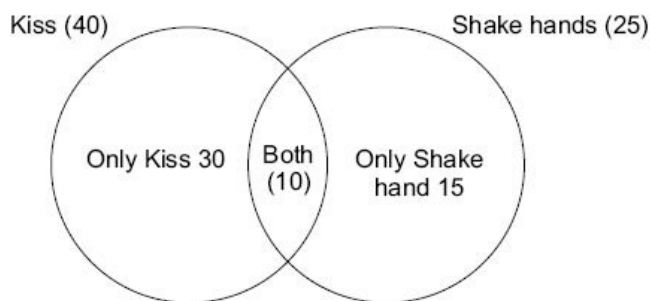
(a) 35

(b) 75

(c) 55

(d) 25

Sol.



From the figure, it is clear that the number of people at the party were $30 + 10 + 15 = 55$.

We can of course solve this mathematically as below:

Let $n(A)$ = No. of persons who kissed Sherry = 40

$n(B)$ = No. of persons who shake hands with Sherry = 25 and $n(A \ll B)$ = No. of persons who shook hands with Sherry and kissed him both = 10

Then using the formula, $n(A \gg B) = n(A) + n(B) - n(A \ll B)$

$$n(A \gg B) = 40 + 25 - 10 = 55$$

ILLUSTRATION 2

Directions for Questions 1 to 4: Refer to the data below and answer the questions that follow:

In an examination 43% passed in Math, 52% passed in Physics and 52% passed in Chemistry. Only 8% students passed in all the three. 14% passed in Math and Physics and 21% passed in Math and Chemistry and 20% passed in Physics and Chemistry. Number of students who took the exam is 200.

Let Set P, Set C and Set M denotes the students who passed in Physics, Chemistry and Mat respectively. Then

1. How many students passed in Math only?

(a) 16

(b) 32

(c) 48

(d) 80

2. Find the ratio of students passing in Math only to the students passing in Chemistry only?

(a) 16:37

(b) 29:32

(c) 16:19

(d) 31:49

3. What is the ratio of the number of students passing in Physics only to the students passing in either Physics or Chemistry or both?

(a) 34/46

(b) 26/84

(c) 49/32

(d) None of these

4. A student is declared pass in the exam only if he/she clears at least two subjects. The number of students who were declared passed in this exam is?
- (a) 33 (b) 66
(c) 39 (d) 78

Sol. Let P denote Physics, C denote Chemistry and M denote Maths.

% of students who passed in P and C only is given by

% of students who passed in P and C – % of students who passed all three = $20\% - 8\% = 12\%$

% of students who passed in P and M only is given by

% of students who passed in P and M – % of students who passed all three = $14\% - 8\% = 6\%$

% of students who passed in M and C only is:

% of students who passed in C and M – % of students who passed all three = $21\% - 8\% = 13\%$

So, % of students who passed in P only is given by:

Total no. passing in P – No. Passing in P & C only – No. Passing P & M only – No. Passing in all three =

$52\% - 12\% - 6\% - 8\% = 26\%$

% of students who passed in M only is:

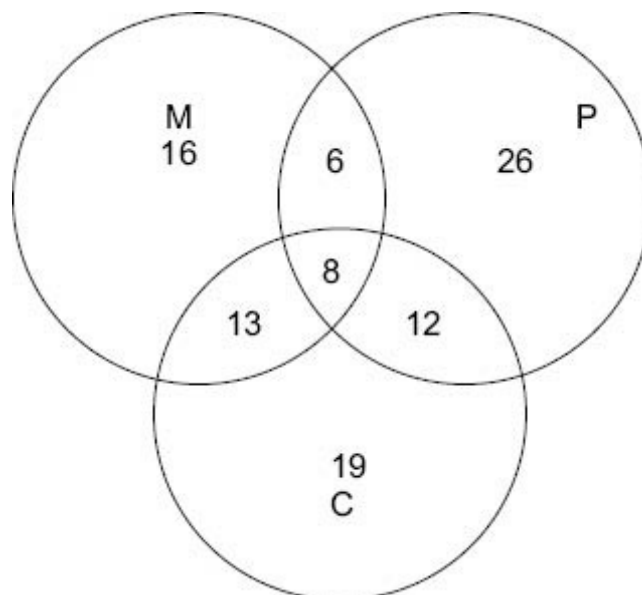
Total no. passing in M – No. Passing in M & C only – No. Passing P & M only – No. Passing in all three =

$43\% - 13\% - 6\% - 8\% = 16\%$

% of students who passed in Chemistry only is

Total no. passing in C – No. Passing in P & C only – No. Passing C & M only – No. Passing in all three =

$52\% - 12\% - 13\% - 8\% = 19\%$



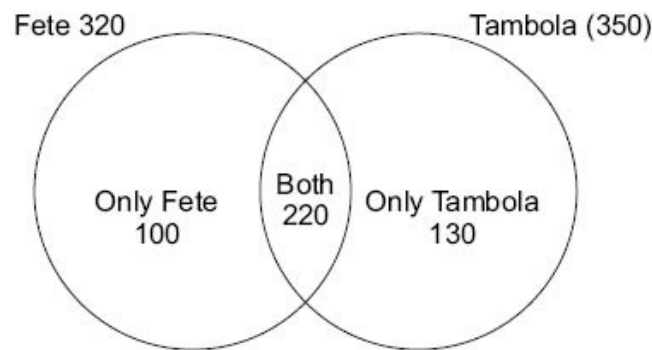
The answers are:

1. Only Math = $16\% = 32$ people. Option (b) is correct.
2. Ratio of Only Math to Only Chemistry = 16:19. Option (c) is correct.
3. 26:84 is the required ratio. Option (b) is correct.
4. 39 % or 78 people. Option (d) is correct.

ILLUSTRATION 3

In the Mindworkzz club all the members participate either in the Tambola or the Fete. 320 participate in the Fete, 350 participate in the Tambola and 220 participate in both. How many members does the club have?

- (a) 410 (b) 550
(c) 440 (d) None of these



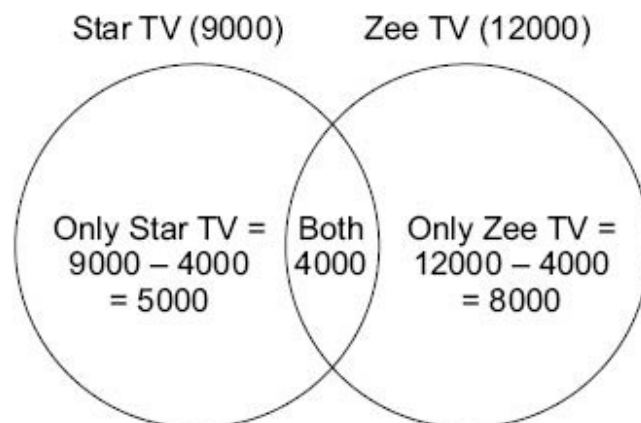
The total number of people = $100 + 220 + 130 = 450$

Option (d) is correct.

ILLUSTRATION 4

There are 20000 people living in Defence Colony, Gurgaon. Out of them 9000 subscribe to Star TV Network and 12000 to Zee TV Network. If 4000 subscribe to both, how many do not subscribe to any of the two?

- (a) 3000 (b) 2000
(c) 1000 (d) 4000



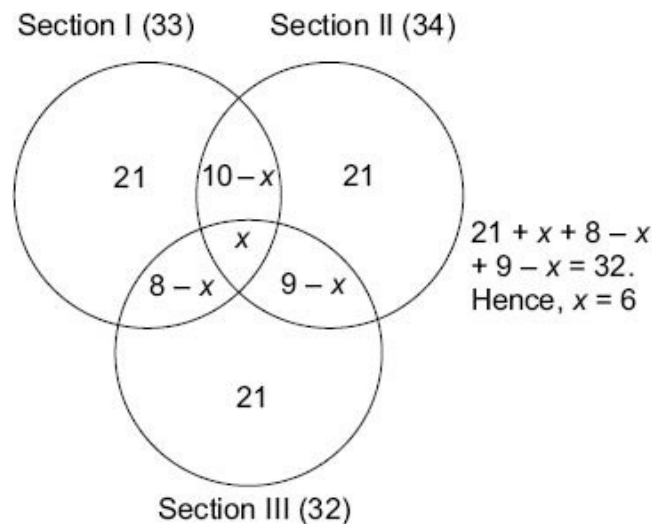
The required answer would be $20000 - 5000 - 4000 - 8000 = 3000$.

ILLUSTRATION 5

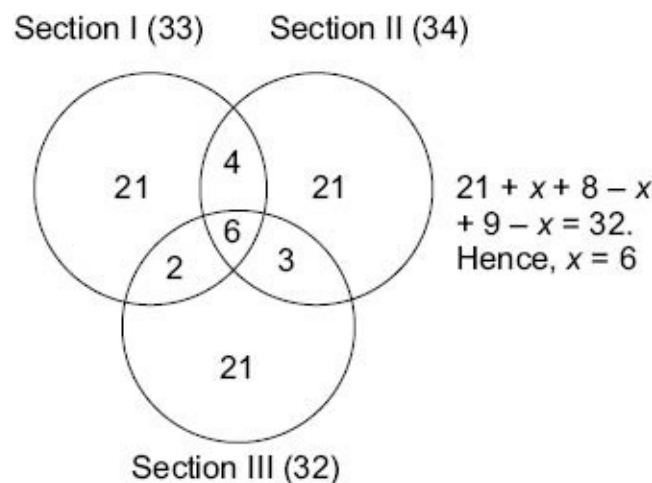
Directions for Questions 1 to 3: Refer to the data below and answer the questions that follow.

Last year, there were 3 sections in the Catalyst, a mock CAT paper. Out of them 33 students cleared the cut-off in Section 1, 34 students cleared the cut-off in Section 2 and 32 cleared the cut-off in Section 3. 10 students cleared the cut-off in Section 1 and Section 2, 9 cleared the cut-off in Section 2 and Section 3, 8 cleared the cut-off in Section 1 and Section 3. The number of people who cleared each section alone was equal and was 21 for each section.

1. How many cleared all the three sections?
(a) 3 (b) 6
(c) 5 (d) 7
2. How many cleared only one of the three sections?
(a) 21 (b) 63
(c) 42 (d) 52
3. The ratio of the number of students clearing the cut-off in one or more of the sections to the number of students clearing the cutoff in Section 1 alone is?
(a) 78/21 (b) 3
(c) 73/21 (d) None of these



Since, $x = 6$, the figure becomes:



The answers would be:

1. 6. Option (b) is correct.
2. $21 + 21 + 21 = 63$. Option (b) is correct.
3. $(21 + 21 + 21 + 6 + 4 + 3 + 2)/21 = 78/21$. Option (a) is correct.

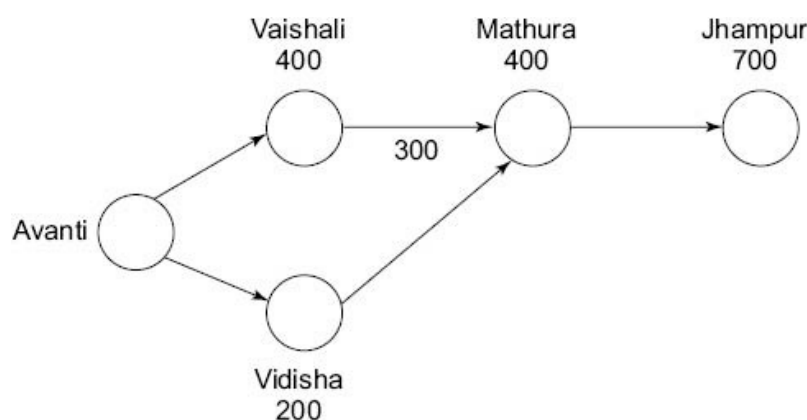
🔍 NETWORK DIAGRAMS

Having had a look at the set theory angles to diagrams based questions, let us also take a look at network diagrams:

ILLUSTRATION 6

Directions for Questions 1 to 3: Answer these questions based on the pipeline diagram below.

The following sketch shows the pipelines carrying material from one location to another. Each location has a demand for material. The demand at Vaishali is 400, at Mathura is 400, at Jhampur is 700 and at Vidisha is 200. Each arrow indicates the direction of material flow through the pipeline. The flow from Vaishali to Mathura is 300. The quantity of material flow is such that the demands at all these locations are exactly met. The capacity of each pipeline is 1000.



1. What is the free capacity available in the Avanti-Vidisha pipeline?
(a) 300 (b) 200
(c) 100 (d) 0
2. What is the free capacity available from Avanti to Vaishali?
(a) 0 (b) 100
(c) 200 (d) 300
3. The quantity moved from Avanti to Vidisha is
(a) 200 (b) 800
(c) 700 (d) 1000

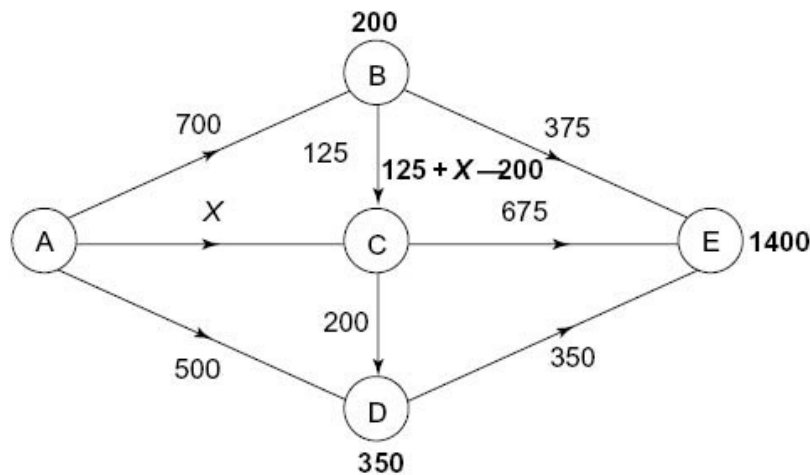
Sol. Since 700 is required at Jhampur, the requirement at Mathura must be 1100, which has to be supplied from the two pipelines coming into Mathura.

It is clear that since Vaishali to Mathura is only 300, the Vidisha-Mathura pipeline should carry 800. Hence, Avanti Vidisha should have 1000.

1. There is no free capacity in the Avanti Vidisha pipeline. Option (d) is correct.
2. Avanti-Vaishali flow should be 700 and hence the free capacity is 300. Option (d) is correct.
3. 1000. Option (d) is correct.

ILLUSTRATION 7

Directions for Questions 1 to 3: In the network diagram above, the figures represent the flow of natural gas through pipelines between major cities A, B, C, D & E (in suitable units). Assume that supply equals demand in the network (although not on individual nodes).



In the network diagram above, the figures represent the flow of natural gas through pipelines between major cities A, B, C, D & E (in suitable units). Assume that supply equals demand in the network (although not on individual nodes).

1. What is the number of units demanded at B?
 (a) 175 (b) 200
 (c) 225 (d) 250
2. If the number of units demanded in C is 225, what is the value of x ?
 (a) 975 (b) 875
 (c) 775 (d) 950
3. What is the demand in D?
 (a) 300 (b) 350
 (c) 375 (d) 450

Sol. Refer to the following figure for the solution:

Directions for Questions 5 to 8: Refer to the data below and answer the questions that follow.

5% of the passengers who boarded Guwahati- New Delhi Rajdhani Express on 20th February, 2002 do not like coffee, tea and ice cream and 10% like all the three. 20% like coffee and tea, 25% like ice cream and coffee and 25% like ice cream and tea. 55% like coffee, 50% like tea and 50 % like ice cream.

5. The number of passengers who like only coffee is greater than the passengers who like only ice cream by
(a) 50% (b) 100%
(c) 25% (d) 0
6. The percentage of passengers who like both tea and ice cream but not coffee is
(a) 15 (b) 5
(c) 10 (d) 25
7. The percentage of passengers who like at least 2 of the 3 products is
(a) 40 (b) 45
(c) 50 (d) 60
8. If the number of passengers is 180, then the number of passengers who like ice cream only is
(a) 10 (b) 18
(c) 27 (d) 36

Directions for Questions 9 to 15: Refer to the data below and answer the questions that follow.

In a survey among students at all the IIMs, it was found that 48% preferred coffee, 54% liked tea and 64% smoked. Of the total, 28% liked coffee and tea, 32% smoked and drank tea and 30% smoked and drank coffee. Only 6% did none of these. If the total number of students is 2000 then find

9. The ratio of the number of students who like only coffee to the number who like only tea is
(a) 5:3 (b) 8:9
(c) 2:3 (d) 3:2
10. Number of students who like coffee and smoking but not tea is
(a) 600 (b) 240
(c) 280 (d) 360
11. The percentage of those who like coffee or tea but not smoking among those who like at least one of these is
(a) more than 30 (b) less than 30
(c) less than 25 (d) none of these
12. The percentage of those who like at least one of these is
(a) 100 (b) 90

- (c) Nil (d) 94
13. The two items having the ratio 1:2 are
 (a) Tea only and tea and smoking only.
 (b) Coffee and smoking only and tea only.
 (c) Coffee and tea but not smoking and smoking but not coffee and tea.
 (d) None of these
14. The number of persons who like coffee and smoking only and the number who like tea only bear a ratio
 (a) 1:2 (b) 1:1
 (c) 5:1 (d) 2:1
15. Percentage of those who like tea and smoking but not coffee is
 (a) 14 (b) 14.9
 (c) less than 14 (d) more than 15
16. 30 monkeys went to a picnic. 25 monkeys chose to irritate cows while 20 chose to irritate buffaloes. How many chose to irritate both buffaloes and cows?
 (a) 10 (b) 15
 (c) 5 (d) 20

Directions for Questions 17 to 20: Refer to the data below and answer the questions that follow.

In the CBSE Board Exams last year, 53% passed in Biology, 61% passed in English, 60% in Social Studies, 24% in Biology & English, 35% in English & Social Studies, 27% in Biology and Social Studies and 5% in none.

17. Percentage of passes in all subjects is
 (a) Nil (b) 12
 (c) 7 (d) 10
18. If the number of students in the class is 200, how many passed in only one subject?
 (a) 48 (b) 46
 (c) more than 50 (d) less than 40
19. If the number of students in the class is 300, what will be the % change in the number of passes in only two subjects, if the original number of students is 200?
 (a) More than 50% (b) Less than 50%
 (c) 50% (d) None of these
20. What is the ratio of percentage of passes in Biology and Social Studies but not English in relation to the percentage of passes in Social Studies and English but not Biology?
 (a) 5:7 (b) 7:5

(c) 4:5

(d) None of these

Directions for Questions 21 to 25: Refer to the data below and answer the questions that follow.

In the McGraw Hill Mindworkzz Quiz held last year, participants were free to choose their respective areas from which they were asked questions. Out of 880 participants, 224 chose Mythology, 240 chose Science and 336 chose Sports, 64 chose both Sports and Science, 80 chose Mythology and Sports, 40 chose Mythology and Science and 24 chose all the three areas.

21. The percentage of participants who did not choose any area is

(a) 23.59%

(b) 30.25%

(c) 37.46%

(d) 27.27%

22. Of those participating, the percentage who choose only one area is

(a) 60%

(b) more than 60%

(c) less than 60%

(d) more than 75%

23. Number of participants who chose at least two areas is

(a) 112

(b) 24

(c) 136

(d) None of these

24. Which of the following areas shows a ratio of 1:8?

(a) Mythology & Science but not Sports: Mythology only

(b) Mythology & Sports but not Science: Science only

(c) Science: Sports

(d) None of these

25. The ratio of students choosing Sports & Science but not Mythology to Science but no Mythology & Sports is

(a) 2:5

(b) 1:4

(c) 1:5

(d) 1:2

Directions for Questions 26 to 30: Refer to the data below and answer the questions that follow.

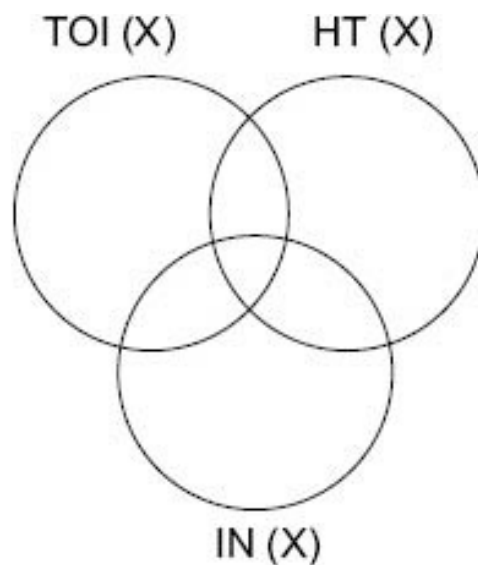
The table here gives the distribution of students according to professional courses.

Courses	STUDENTS			
	English		Math	
	MALES	FEMALES	MALES	FEMALES
Part-time MBA	30	10	50	10
Full-time MBA only	150	8	16	6
CA only	90	10	37	3
Full time MBA & CA	70	2	7	1

26. What is the percentage of Math students over English students?
 (a) 50.4 (b) 61.4
 (c) 49.4 (d) None of these
27. The average number of females in all the courses is (count people doing full-time MBA and CA as a separate course)
 (a) less than 12 (b) greater than 12
 (c) 12 (d) None of these
28. The ratio of the number of girls to the number of boys is
 (a) 5:36 (b) 1:9
 (c) 1:7.2 (d) None of these
29. The percentage increase in students of full-time MBA only over CA only is
 (a) less than 20 (b) less than 25
 (c) less than 30 (d) more than 30
30. The number of students doing full-time MBA or CA is
 (a) 320 (b) 80
 (c) 160 (d) None of these.

Directions for Questions 31 to 34: Refer to the data below and answer the questions that follow:

A newspaper agent sells The TOI, The HT and The IN in equal numbers to 302 persons. Seven get HT & IN, twelve get The TOI & IN, nine get The TOI & HT and three get all the three newspapers. The details are given in the Venn diagram:



31. How many get only one paper?
 (a) 280 (b) 327
 (c) 109 (d) None of these

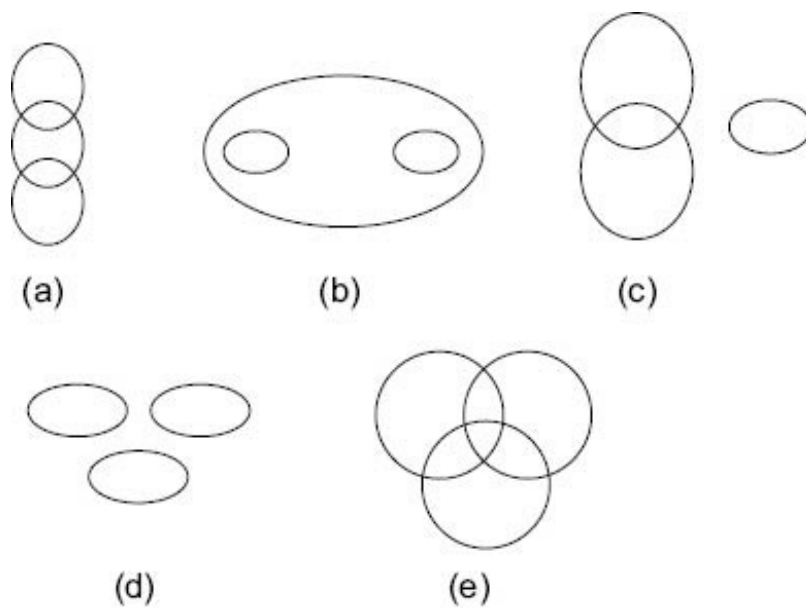
32. What percent get The TOI and The HT but not The IN
- (a) more than 65% (b) less than 60%
- (c) @ 64% (d) None of these.
33. The number of persons buying The TOI and The HT only, The TOI and The IN only and The HT and The IN only are in the ratio of
- (a) 6:4:9 (b) 6:9:4
- (c) 4:9:6 (d) None of these
34. The difference between the number reading The HT and The IN only and The HT only is
- (a) 77 (b) 78
- (c) 83 (d) None of these.
35. A group of 78 people watch Zee TV, Star Plus or Sony. Of these, 36 watch Zee TV, 48 watch Star Plus and 32 watch Sony. If 14 people watch both Zee TV and Star Plus, 20 people watch both Star Plus and Sony, and 12 people watch both Sony and Zee TV find the ratio of the number of people who watch only Zee TV to the number of people who watch only Sony.
- (a) 9:4 (b) 3:2
- (c) 5:3 (d) 7:4

Directions for Questions 36 to 37: Answer the questions based on the following information.

The following data was observed from a study of car complaints received from 180 respondents at Colonel Verma's car care workshop, viz., engine problem, transmission problem or mileage problem. Of those surveyed, there was no one who faced exactly two of these problems. There were 90 respondents who faced engine problems, 120 who faced transmission problems and 150 who faced mileage problems.

36. How many of them faced all the three problems?
- (a) 45 (b) 60
- (c) 90 (d) 20
37. How many of them faced either transmission problems or engine problems?
- (a) 30 (b) 60
- (c) 90 (d) 40

Direction for Questions 38 to 42: given below are five diagrams one of which describes the relationship among the three classes given in each of the five questions that follow. You have to decide which of the diagrams is the most suitable for a particular set of classes. The number of the diagram is your answer.

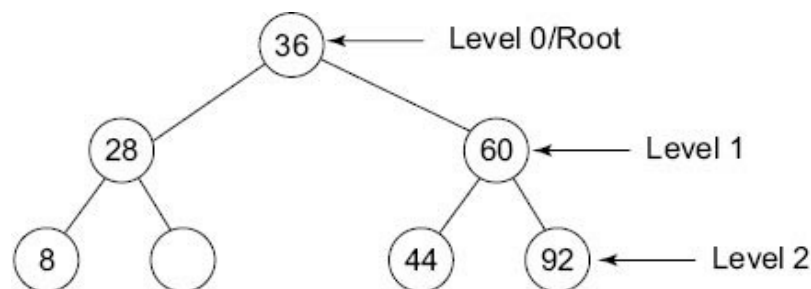


38. Elephants, tigers, animals
39. Administrators, Doctors, Authors
40. Platinum, Copper, Gold
41. Gold, Platinum, Ornaments
42. Television, Radio, Mediums of Entertainment

Direction for Questions 43 to 45: In the ancient game of “placing the numbers on a tree branch” a sequence of numbers is provided to an individual participant and he is then asked to place the numbers in the branches of a hanging tree with the first number forming the top most node of the tree (and this node is called the root of the tree) and the subsequent numbers are placed in the left sub tree if the number is smaller than the number at the root or in the right sub tree, if the number is greater than the number in the root. A node is denoted by an oval and has to include a number in it. Each node at a level can be viewed as a tree itself and the same rule applies to it as well. For every node, if a number is greater than the number at the node, then it must be in the nodes to its right and if the number be smaller than the number at the node, then it must be in the nodes to its left. New numbers must obey the rule of all nodes above itself.

Numbers shall not repeat themselves in the nodes and in case a number appears which has already appeared earlier in the tree it has to be placed on the right most of its possible positions.

E.g, 36, 28, 60, 92, 8, 44



Given is a sequence of numbers and an empty tree. Fill the numbers in the appropriate nodes. The sequence is given in order and starts from 56

56, 60, 16, 36, 28, 72, 12, 20, 64, 16, 80, 68, 36, 56, 20

43. What are the numbers at level 2?
 (a) 12, 20, 28 (b) 12, 36, 72
 (c) 12,36,56,72 (d) 16, 36,64, 80
44. What is the sum of the numbers at the level 3?
 (a) 172 (b) 128
 (c) 76 (d) 208
45. How many nodes are at the 4th level?
 (a) 7 (b) 3
 (c) 9 (d) 2
46. Seventy percent of the employees in a multinational corporation have VCD players, 75 percent have microwave ovens, 80 percent have ACs and 85 percent have washing machines. At least what percentage of employees has all four gadgets?
 (a) 15 (b) 5
 (c) 10 (d) Cannot be determined

Answer Key

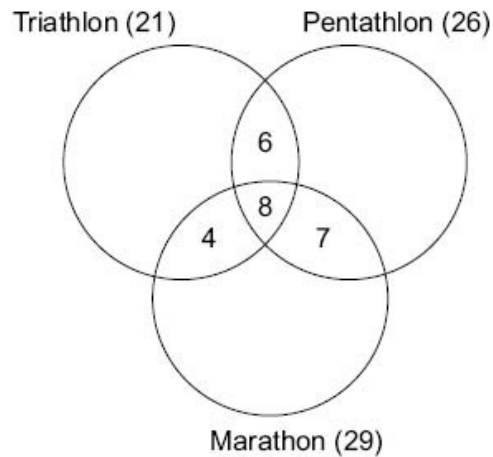
1. (b)	2. (a)	3. (b)	4. (a)
5. (b)	6. (a)	7. (c)	8. (b)
9. (c)	10. (b)	11. (a)	12. (d)
13. (c)	14. (b)	15. (a)	16. (b)
17. (c)	18. (c)	19. (c)	20. (a)
21. (d)	22. (c)	23. (c)	24. (a)
25. (b)	26. (d)	27. (b)	28. (b)
29. (c)	30. (a)	31. (a)	32. (c)
33. (b)	34. (d)	35. (a)	36. (c)
37. (b)	38. (b)	39. (b)	40. (d)
41. (a)	42. (b)	43. (c)	44. (d)
45. (d)	46. (c)		

Solutions

Solutions for Questions 1 and 2: Since there are 14 who are in triathlon and pentathlon, and there are 8 who take part in all three games, there will be 6 who take part in only triathlon and pentathlon.

Similarly,

Only triathlon and marathon = $12 - 8 = 4$ & Only Pentathlon and Marathon = $15 - 8 = 7$.

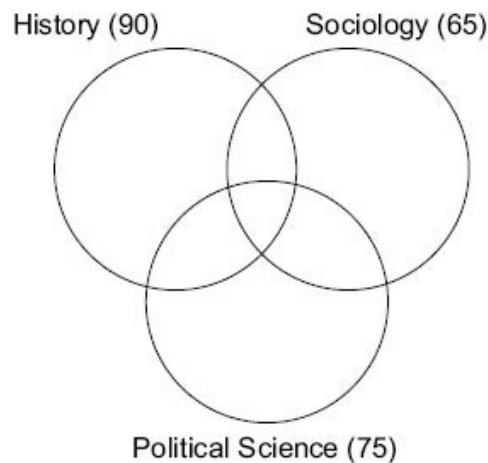


The figure above can be completed with values for each sport (only) plugged in:

The answers would be:

1. $3 + 6 + 8 + 4 + 5 + 7 + 10 = 43$. Option (b) is correct.
2. Option (a) is correct.

Solutions for Questions 3 and 4:



The given situation can be read as follows:

115 students are being counted $75 + 65 + 90 = 230$ times.

This means that there is an extra count of 115. This extra count of 115 can be created in 2 ways.

- A. By putting people in the 'passed exactly two subjects' category. In such a case each person would get counted 2 times (double counted), i.e., an extra count of 1.
- B. By putting people in the 'all three' category, each person put there would be triple counted. 1 person counted 3 times – meaning an extra count of 2 per person.

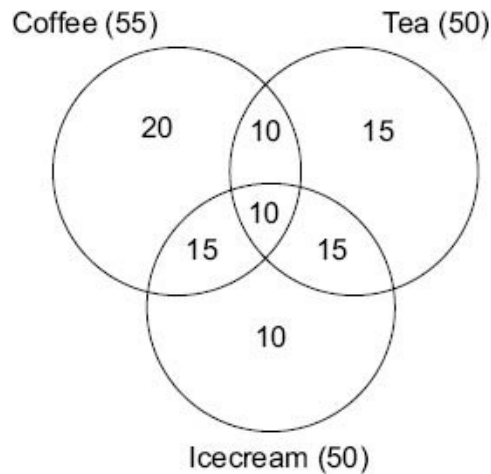
The problem tells us that there are 55 students who passed exactly two subjects. This means an extra count of 55 would be accounted for. This would leave an extra count of $115 - 55 = 60$ more to be accounted for by 'passed all three' category. This can be done by using 30 people in the 'all 3' category.

Hence, the answers are:

3. Option (b)

4. Option (a)

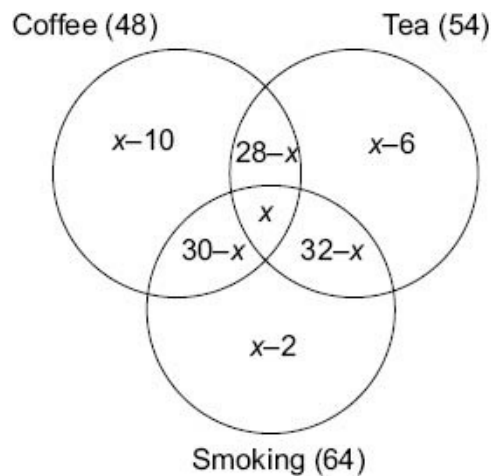
Solutions for Questions 5 to 8: Based on the information provided we would get the following figure:



The answers could be read off the figure as:

5. $[(20 - 10)/10] * 100 = 100\%$. Option (b) is correct.
6. 15% (from the figure). Option (a) is correct.
7. $10+10+15+15=50\%$. Option (c) is correct.
8. Only ice cream is 10% of the total. Hence, 10% of $180 = 18$. Option (b) is correct.

Solutions for Questions 9 to 15: If you try to draw a figure for this question, the figure would be something like:



We can then solve this as:

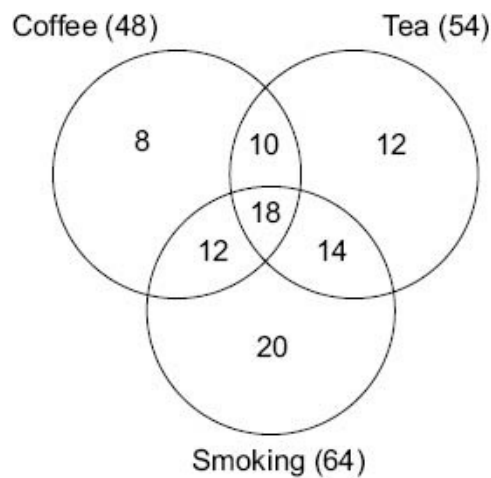
$$x - 10 + 28 - x + x + 30 - x + x + 2 + 32 - x + x - 6 = 94 \quad \text{Æ} \quad x + 76 = 94 \quad \text{Æ} \quad x = 18.$$

Note: In this question, since all the values for the use of the set theory formula are given, we can find the missing value of students who liked all three as follows:

$$94 = 48 + 54 + 64 - 28 - 32 - 30 + \text{All three} \quad \text{Æ} \quad \text{All three} = 18$$

As you can see this is a much more convenient way of solving this question, and the learning you take away for the 3 circle situation is that whenever you have all the values known and the only unknown value is the center value – it is wiser and more efficient to solve for the unknown using the formula rather than trying to solve through a venn diagram.

Based on this value of x we get the diagram completed as:



The answers then are:

9. $8:12 = 2:3$ $\therefore$ Option (c) is correct.
10. 12% of $2000 = 240$. Option (b) is correct.
11. $30/94$ $\therefore$ more than 30% . Option (a) is correct.
12. 94% . Option (d) is correct.
13. Option (c) is correct as the ratio turns out to be $10:20$ in that case.
14. $12:12 = 1:1$ $\therefore$ Option (b) is correct.
15. 14% . Option (a) is correct.
16. $30 = 25 + 20 - x$ $\therefore x = 15$. Option (b) is correct.

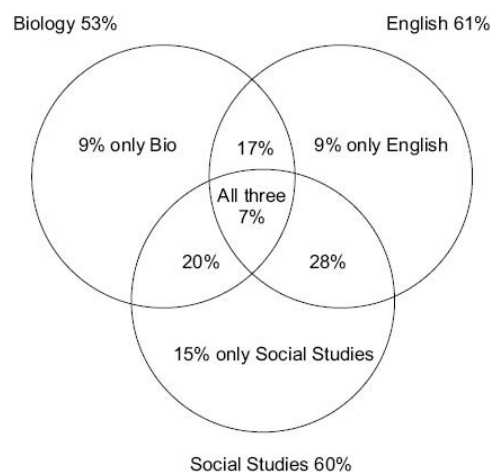
Solutions for Questions 17 to 20:

Let people who passed all three be x . Then:

$$53 + 61 + 60 - 24 - 35 - 27 + x = 95$$

$$\therefore x = 7.$$

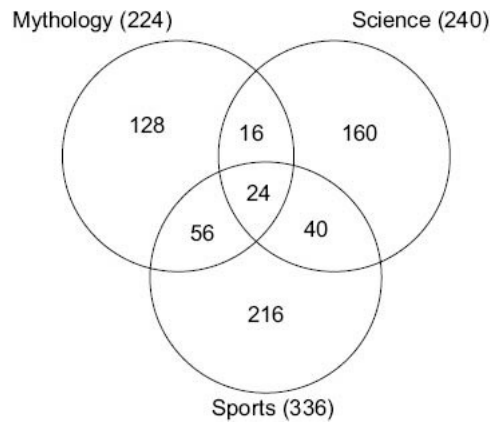
The venn diagram in this case would become:



17. Option (c) is correct.
18. 33% of $200 =$ more than 50 . Option (c) is correct.
19. If the number of students is increased by 50% , the number of students in each category would also be increased by 50% . Option (c) is correct.

20. $20:28 = 5:7$. Option (a) is correct.

Solutions for Questions 21 to 25: The following figure would emerge on using all the information in the question:



The answers would then be:

21. $240/880 = 27.27\%$. Option (d) is correct.

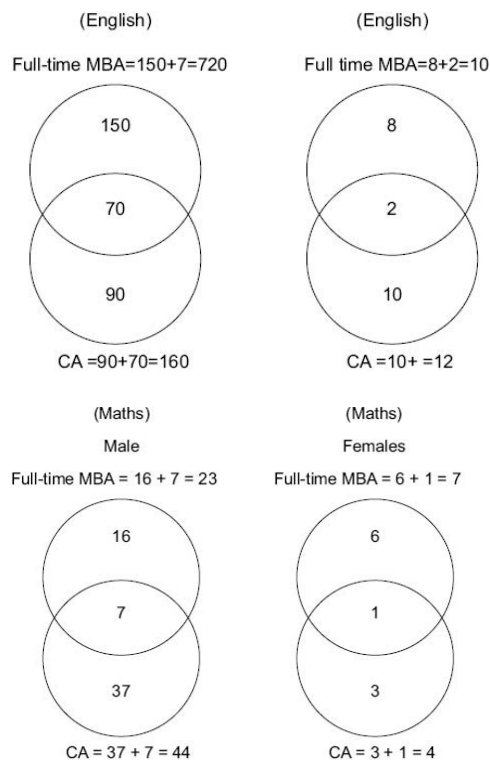
22. $504/880 = 57.27\%$. Hence, less than 60. Option (c) is correct.

23. $40 + 16 + 56 + 24 = 136$. Option (c) is correct.

24. Option a gives us $16:128 = 1:8$. Option (a) is hence correct.

25. $40:160 \propto 1:4$. Option (b) is correct.

Solutions for Questions 26 to 30: The following Venn diagrams would emerge:



26. Math Students = 130. English Students = 370

$130/370 = 35.13\%$. Option (d) is correct.

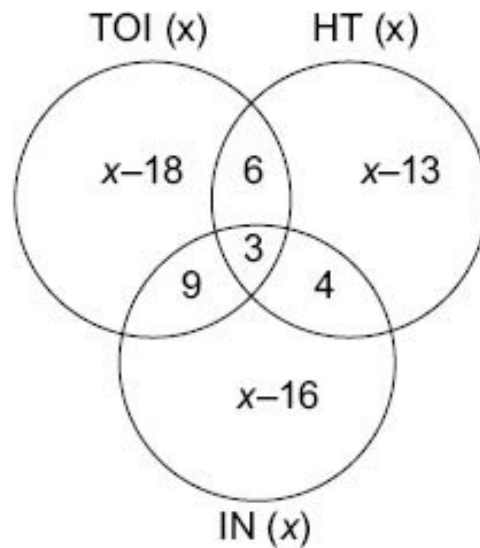
27. Number of Female Students = $10 + 8 + 10 + 2 + 10 + 6 + 3 + 1 = 50$. Average number of females per course = $50/4 = 12.5$. Option (b) is correct.

28. $50:450 = 1:9$. Option (b) is correct.

29. $40/140 \approx 28.57\%$. Option (c) is correct.

30. From the figures, this value would be $150 + 8 + 90 + 10 + 16 + 6 + 37 + 3 = 320$. Option (a) is correct.

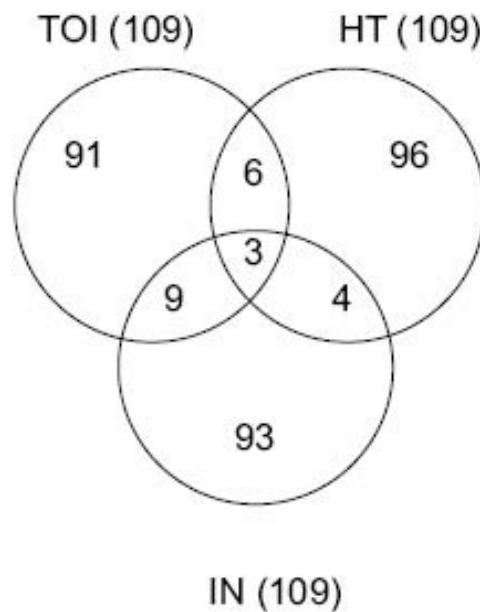
Solutions for Questions 31 to 34: The following figure would emerge-



Based on this figure we have:

$x + x - 13 + 4 + x - 16 = 302 \Rightarrow 3x - 25 = 302 \Rightarrow x = 327$. Hence, $x = 109$.

Consequently the figure becomes:



The answers are:

31. $91 + 93 + 96 = 280$. Option (a) is correct.

32. $193/302 @ 64\%$. Option (c) is correct.

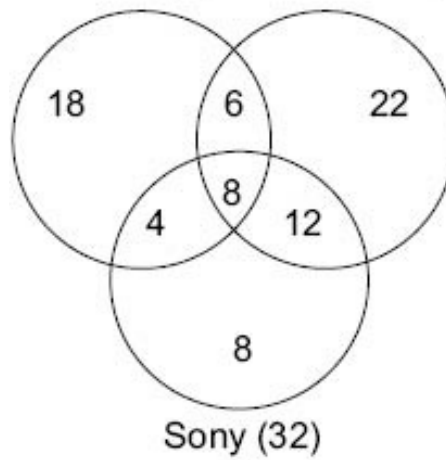
33. 6:9:4 is the required ratio. Option (b) is correct.

34. $96 - 4 = 92$. Options (d) is correct.

35. $78 = 36 + 48 + 32 - 14 - 20 - 12 + x \Rightarrow x = 8$.

The figure for this question would become:

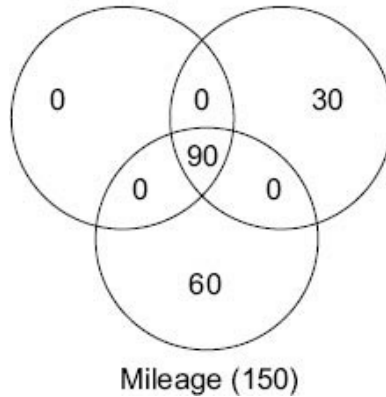
Zee TV (36) Star Plus (48)



Required ratio is $18:8 \Rightarrow 9:4$. Option (a) is correct.

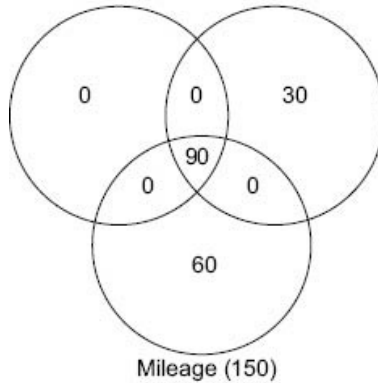
36. Option (c) is correct.

Engine (90) Transmission (120)



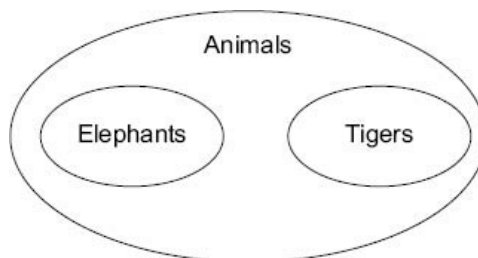
37. There are 30 such people. Option (b) is correct.

Engine (90) Transmission (120)

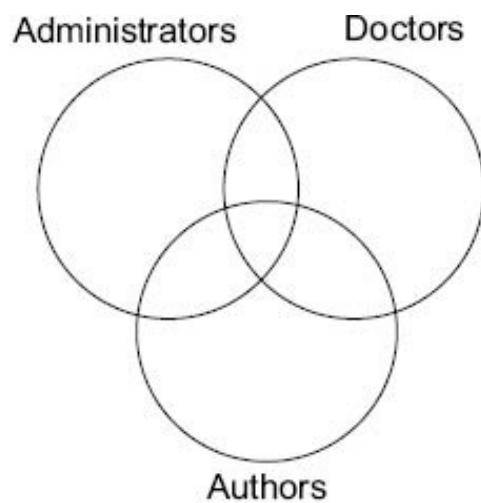


Solutions for Questions 38 to 42:

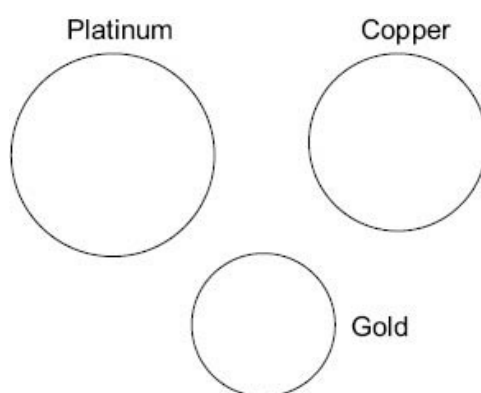
38. Option (b) is correct



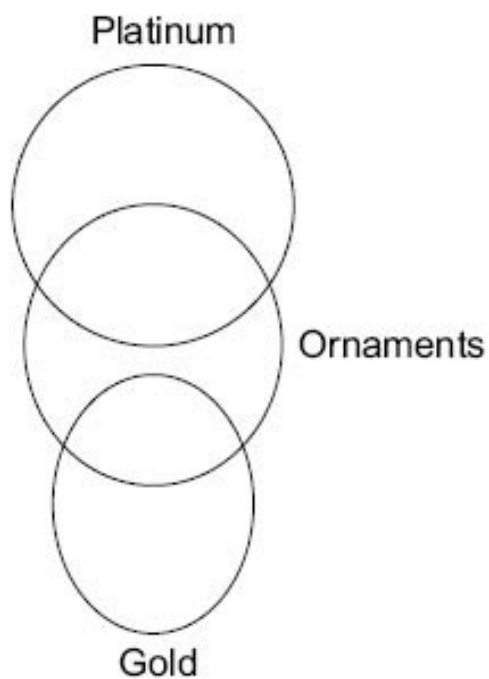
39. Option (b) is correct.



40. Option (d) is correct.

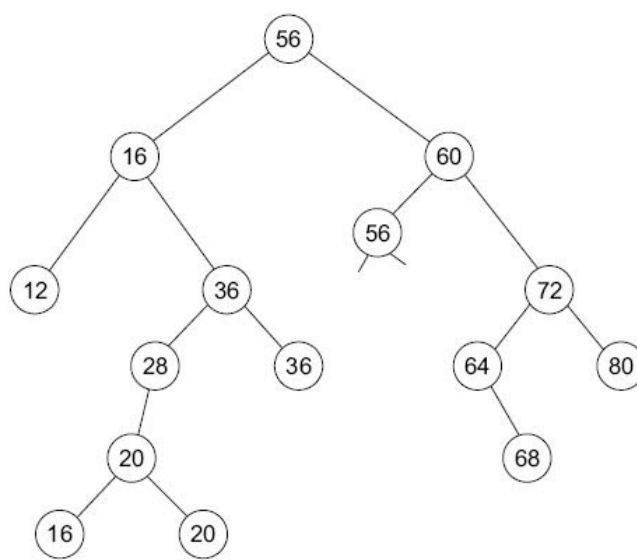


41. Option (a) is correct.



42. Option (b) is correct

Solutions for Questions 43 to 45:



The answers can be read off the above grid.

43. Option (c) is correct.

44. The sum is $208 = 80 + 64 + 36 + 28$. Option (d) is correct.

45. There are 2 nodes at the 4th level. Option (d) is correct.

46. The least percentage of people with all 4 gadgets would happen if all the employees who are not having any one of the four objects is mutually exclusive.

$$\text{Thus, } 100 - 30 - 25 - 20 - 15 = 10$$

Option (c) is correct.

Binary Logic

These question types are called binary logic questions simply because each question contains two logic streams that have to be matched, in order to get to the correct answer. Mainly, there are two types of questions as below:

BINARY LOGIC QUESTION—PATTERNS

Type 1

In this question type, three persons speak two statements each—one of which is true, the other is false.

The two logic streams to be considered are:

1. The logic of the Statements, i.e., the logic of what is said within the statements.
2. The logic of the Basic Conditions, i.e., the logic of the fact that if one sentence is taken as true, the other will be false automatically.

The process of solving these questions is best illustrated through an example.

 Gauri Islands is the name of an island. The inhabitants of this island always answer any question with two sentences. One of which is always true and the other always false.

Milly, Silly and Dilly are the three daughters of the chief whip of this island. Out of them, two are minor and one is of a marriageable age. You have been caught as an intruder on the island and you have two options given by the chief whip: identify his daughter who is of marriageable age. If you do so, you can have the privilege of marrying her and becoming the new chief whip in the future. On the other hand, if you cannot, you will be executed. Only Silly has dentures in her teeth. On questioning the three daughters, these are the answers you get:

Milly: “I am shorter than Silly. The girl of marriageable age has dentures in her teeth.”

Silly: “I am shorter than Milly. Dilly is the one who is of a marriageable age.”

Dilly: The girl of marriageable age is amongst the three of us. I am of a marriageable age.”

Who is the girl of marriageable age?

(a) Milly (b) Dolly

(c) Silly (d) Can't say

 In the above question, you should see that, the first statement of Dilly has to be correct (By Logic of the statement—If you evaluate what the statement is saying, it is clear that it has to be true. It can be easily understood that the girl of marriageable age is amongst the three of the girls.)

In this case, if this statement is true, then Dilly's second statement is automatically false. Further, since Dilly's second statement is false, Silly's second statement will also be false. (By evaluating the sentence logic—as both these statements are saying the same thing.) Hence, Silly's first statement will be true (Basic Condition logic) and hence further, Milly's first statement will be false (It is saying the opposite of Silly's true first statement—Statement Logic). Hence, Milly's second statement has to be true. Hence, Silly has to be the one of marriageable age.

PRACTICE EXERCISES

Type 1

Direction On an island 'Mola-Moola' the inhabitants always answer any question with two sentences—one of which is always true and the other always false.

Read the question below very carefully and choose the correct answer for the questions that follow:

The commissioner of the island discovers that smuggling is rampant there. You have been hired as a private detective in order to determine the identity of the culprits and also to know more about the next heist on the basis of a plane. You question three suspects as to when the plane is expected and what it looks like. This is what they have to say:

Subhash: It arrives at 11:00 p.m. The colour of the plane is only red.

Rubhash: It arrives at 11:00 p.m. The colour of the plane is only yellow.

Bibhash: I know at what time the ship arrives. Rubhash is lying about the time of arrival.

1. At what time does the plane arrive?

(a) 6 p.m.

(b) 11 p.m.

(c) Can't say

(d) Won't arrive

2. What is the colour of the plane?

(a) Can't say

(b) Red

(c) Yellow

(d) Both red and yellow

Suddenly, a murder takes place on the island. It is imperative that you locate the person who is the murderer. On further investigation, you find that the murderer has to be a person who has been to the chief whip's house within the last five days (today is Friday). By careful questioning, you narrow the possibilities down to three people. This is what they have to say.

Rani: "I went to the Chief Whip's house. It was before Monday."

Vani: "Rani did not go to the Chief Whip's house. I have not gone to the Chief Whip's house in the last five days either".

Siwani: “Rani did not go to the Chief Whip’s house. I am not the murderer.”

3. Who is the murderer?

(a) Siwani

(b) Rani

(c) Vani

(d) Can’t say

In the village of Rampur, all inhabitants always answer any question with two sentences, one of which is always true, the other is always false.

While visiting the village, Gauri meets three inhabitants—Rajesh, Mahesh and Ramesh near the village square. One of them is wearing a suit. Knowing that they were there to resolve a dispute over the ownership of some land, you ask them—“Who got the land?” They answer as follows:

Rajesh: “I got the land. Ramesh is wearing the suit.”

Mahesh: “I am wearing the suit. I got the land.”

Ramesh: “I got the land. I am not wearing the suit.”

4. Who is wearing the suit?

(a) Rajesh

(b) Mahesh

(c) Ramesh

(d) None of these

5. Who got the land?

(a) Rajesh

(b) Can’t say

(c) Ramesh

(d) Mahesh

On waking up the next morning, you find that your brand new watch has been stolen. The suspects are the same trio you met the previous day. You question them (knowing that only one of them is guilty). And they reply as follows:

Rajesh: “Mahesh did not do it. I did not do it.”

Mahesh: “I did not do it. Ramesh did not do it.”

Ramesh: “I did not do it. I do not know who did it.”

6. Who stole the watch?

(a) Can’t say

(b) Ramesh

(c) Mahesh

(d) Rajesh

In a small island called Neverneverland, the people always answer any question with two sentences—one of which is always right and the other is false.

Perhaps due to this peculiar habit, there’s been a high rate of suicides on the island. As a doctor, you have to identify potentially suicidal people and counsel them. You know that all people who are suicidal feel that life is futile. On questioning three inhabitants, these are the answers you get:

Anuj: “Himansu is suicidal. I am not suicidal.”

Himansu: “I do not want to die. Akshay does not want to die.”

Akshay: “Life is futile. I am suicidal.”

7. Who among the three is suicidal?

(a) Anuj and Himansu

(b) Himansu

(c) Himansu and Akshay

(d) Akshay

8. Which of them is lying about another person's tendencies?

(a) Akshay

(b) Himansu

(c) Anuj and Himansu

(d) None of them is lying about another person's tendencies

Going around the village, you come across three people. One of them is a dentist, one a barrister and one a professor. You want to know who is who.

Peter says, "I am not a professor. Shina is not a professor."

Matt says, "Peter is not a barrister. Shina is a professor."

Shina says, "Peter is not a dentist. I am not a professor."

9. Which of the following is true?

(a) Shina is the professor

(b) Peter is the dentist

(c) Matt is the barrister.

(d) None of these

Further, you come across three women, one of whom is an excellent singer. You start questioning them, when you notice that Minaxi is wearing a flower in her hair.

Madhuri says, "I am not the singer. The singer wears a flower in her hair."

Minaxi says, "I am the singer. The singer is amongst us."

Jaya says, "Madhuri is the singer. Minaxi is not the singer."

10. Who is the singer?

(a) Madhuri

(b) Minaxi

(c) Jaya

(d) None of these

You want to expand your horizons and decide to go to the village of "Where is Who", which is further inside. You come to the border of "Kya Kya" and see a fork. One leads left and the other right. There are no other roads. You ask the inhabitants:

Maroof says, "I do not speak to strangers. I am new to these parts."

Nafish says, "Take the road to the right. I am married to Ayesha."

Ayesha says, "I am not Nafish's wife. Maroof is not new to these parts."

11. Which of the following is true?

(a) The road to the right leads to "Where is Who".

(b) The road to the left leads to "Where is Who".

- (c) Nafish is married to Ayesha.
- (d) None of these.

On moving further, you come across another small village of Patina, whose inhabitants answer all questions with two sentences—one of which is true and the other always false.

I asked Shahrukh, Amitabh and Abhishek, “Did it snow last night?” and I got the following replies:

Shahrukh: Yes, it snowed last night. Moreover, Amitabh fell sick last night.

Amitabh: Yes, it snowed last night. But then I never lie.

Abhishek: No, it did not snow last night. But Shahrukh got married yesterday.

12. Which of the following statements is true?

- (a) It did not snow last night.
- (b) Amitabh fell sick last night
- (c) Shahrukh got married yesterday
- (d) None of these.

Rophas Khopas is a small land locked country in the Vindhyan forest range, with a distinct dress, culture, food habits, national language, national dance, a national bird, and a national animal. The inhabitants speak in two sentences—one of which is true and the other false.

I asked Shiva, Monu and Vijay, the three important citizens of Rophas Khopas, “What is the national language of Rophas Khopas?” and I got the following replies:

Shiva: “French is our national language. Hundred percent of our citizens are literate.”

Monu: Latin is our national language. We have a very poor literacy rate in the country.

Vijay: We have a very poor literacy rate in the country. Our national language is Bhasha Khopas.

13. The national language of Rophas Khopas is

- (a) French
- (b) Latin
- (c) Bhasha Khopas
- (d) Cannot be ascertained

14. With reference to question 13 above, the rate of literacy in Rophas Khopas is

- (a) Very poor
- (b) Good
- (c) 100%
- (d) Cannot be ascertained

I asked Shiva, Monu and Vijay, “What is your national dress?” and I got the following replies:

Shiva: Our national dress is Pathani suit. People wear the national dress on very special occasions only.

Monu: Our national dress is Sari. People wear the national dress on very special occasions only.

Vijay: Our national dress is suit boot. But no one is ever permitted to wear the national dress.

15. The national dress of Rophas Khopas is

- (a) Pathani suit

- (b) Sari
- (c) Suit Boot
- (d) Cannot be ascertained

I asked Shiva, Monu and Vijay, “What is your national food?” and I got the following replies:

Shiva: Our national food is *sabudana khichdi*. Most of our people are hale and hearty.

Monu: Our people are not hale and hearty at all. Our national food is *makki ki roti*.

Vijay: Most of our people are hale and hearty. Our national food is *rice kee kheer*.

16. The national food of Rophas Khopas is:

- (a) *sabudana khichdi*
- (b) *makki ki roti*
- (c) *rice kee kheer*
- (d) Cannot be ascertained

17. With reference to Question 16 above, in Rophas Khopas:

- (a) people are not hale and hearty.
- (b) some people are hale and hearty.
- (c) most people are hale and hearty.
- (d) cannot be ascertained.

I asked Shiva, Monu and Vijay, “What is your national bird?” and got the following replies:

Shiva: Our national bird is cackatoo. We are a peace loving country.

Monu: Our national bird is sparrow. We are a peace loving country.

Vijay: Our national bird is owl. But we worship the sparrow.

18. The national bird of Rophas Khopas is

- (a) Sparrow
- (b) Cackatoo
- (c) Owl
- (d) Cannot be ascertained.

I asked Shiva, Monu and Vijay, “What is your national animal?” and I got following replies:

Shiva: Our national bird is kangaroo. We have thick growth of vegetation all over.

Monu: Our national bird is donkey. We have thick growth of vegetation all over.

Vijay: Ours is a mountainous country with almost no vegetation. Our national animal is koala.

19. The national animal of Rophas Khopas is

- (a) Kangaroo
- (b) Donkey
- (c) Koala
- (d) Cannot be ascertained.

I asked Shiva, Monu and Vijay, “What is your national dance?” and got the following replies:

Shiva: Samba is our national dance. We do not like or appreciate cricket.

Monu: Salsa is our national dance. We are great lovers of aggressive cricket.

Vijay: Disco is our national dance. We are great lovers of aggressive cricket.

20. The national dance of Rophas Khopas is

- (a) Samba
- (b) Salsa
- (c) Disco
- (d) Cannot be ascertained.

21. With reference to Question 20 above, people of Rophas Khopas:

- (a) do not like or appreciate cricket.
- (b) like and appreciate cricket.
- (c) are great lovers of aggressive cricket.
- (d) Cannot be ascertained.

In the parliament of the Ravindra Rami, all members have a peculiar habit. Of any two sentences they speak, one is false and the other is true. You record the statements of three sitting members: Rozor, Sam, and Michael.

Rozor: The President claims he is the President. I am the President.

Sam: I am the President. Rozor is the President.

Michael: I am the President. Sam knows who is the President.

Answer the following questions based on these recorded statements.

22. The real President can be determined from

- (a) Sam's and Rozor's statements alone.
- (b) Sam's and Michael's statements alone.
- (c) Michael's and Rozor's statements alone.
- (d) None of the above.

23. If Rozor's first statement is false, which of the following cannot be President?

- (a) Sam
- (b) Rozor
- (c) Michael
- (d) Rozor's first statement cannot be false.

24. Who is the President?

- (a) Sam
- (b) Rozor
- (c) Michael
- (d) Can't be determined

25. Whose first statement is true?

- (a) Sam and Michael
- (b) Michael and Rozor

- (c) Sam and Rozor
 - (d) Can't be determined
26. Whose first statement is false?
- (a) Sam
 - (b) Rozor
 - (c) Michael
 - (d) Sam and Michael

You move on. Next, you are asked to solve the mystery of who murdered Manmohan, the most influential resident of the village. You question three suspects:

Ali says, "It was me who killed Manmohan. It was Saif."

Saif says, "It was me who killed Manmohan. It was Ramu."

Ramu says, "It was not me who killed Manmohan. It was not Ali."

27. Who murdered Manmohan?
- (a) Ali
 - (b) Saif
 - (c) Ramu
 - (d) Such a situation is not possible

Type 2

In this type of questions, we have two types of people: those who always speak the truth, and those who always lie. These questions are also classified as Binary Logic questions since they are solved on the basis of two logical streams that run parallel to each other, viz: Basic Condition Logic (BCL) and Logic of the Statements (LoS).

The Basic Condition Logic flows from the fact that if a person always speaks the truth, then whatever statement he says must be true. However, in some cases, a clash might arise between the Basic Condition Logic and the Statement Logic, if it can be seen that the statement is obviously false.

The best way to understand this question type is by looking at an example:

You meet three inhabitants—Rohit, Mohit and Sohiti—standing together. You ask Rohit "Are you a type X or type Y?" He mumbles something, which you cannot catch, so you ask Mohit, "What did Rohit say?" Mohit replies "Rohit said that he is type Y." You look at Sohiti and he says, "Do not believe Mohit, he is lying."

Which of the following is true?

- 1. Rohit is a type X.
- 2. Mohit is a type Y.
- 3. Sohiti is a type Y.
- 4. All of these.

By BCL, Sohiti could be Type X or Type Y:

If Sohiti is Type Y, his statement must be false. That means Mohit is not lying. Hence, Mohit should be Type X and hence his statement must be true, i.e., Rohit must have said that he is Type Y.

However, if you look at Rohit, he could not have made this statement in either case.

If we assume that Rohit is Type X, he would only speak the truth and he would then say that he is Type X, not that he is Type Y.

On the other hand, if we were to assume that Rohit is a Type Y, he would only speak false. But then he could not have said that he is Type Y, since that statement would be true.

Directions for Questions 1 to 4: The following questions are based on an island called Gutar Goc on which there are only two kinds of inhabitants:

Type X: people who always speak the truth; and

Type Y: people who always lie.

1. You go to the island and see a group of three people—Arun, Bakshi and Calvin. You ask Arun, “How many type X’s are there amongst you?” Unfortunately, Arun’s reply is drowned by some noise and you ask Bakshi, “What did Arun say?” Bakshi says, “Arun said that there is one type X among us.” However, Calvin immediately says, “ Don’t believe Bakshi, he is lying.”

Which of the following is true?

- (a) Bakshi is a type X
 - (b) Arun is a type Y.
 - (c) Calvin is a type X
 - (d) None of these
2. You are very intrigued. You decide to find out more. You question two other persons—Manoj and Hemant. Manoj says, “At least one of us is a type Y.”

Which of the following is true?

- (a) Manoj is type X.
 - (b) Hemant is a type X.
 - (c) Both (a) and (b)
 - (d) None of these
3. You are further intrigued and decide to continue further on into the island of Gutar Goo. Coming across a group of three persons—Raju, Golu, and Suyash—you hear them make two statements:

Raju: “All of us are type Y’s”.

Golu: “Exactly one of us is a type X.”

Which of the following is true?

- (a) Raju is type Y
 - (b) Golu is a type X.
 - (c) Suyash is a type Y
 - (d) All of these
4. By now you have had just a bit too much of the island—however, on the insistence of your friend Bakshi, you continue further. You meet two persons—Suyash and Divyansh. Suyash

says, “I am a type Y. But Divyansh isn’t.”

Who is type X?

- (a) Suyash
- (b) Divyansh
- (c) Indeterminate
- (d) None of these

Directions for Questions 5 to 10: Read the following paragraph and answer the questions that follow.

There are two types of inhabitants in Tatabalery—A type and B type. The A type of inhabitants always speak the truth and the B type of inhabitants always lie.

5. Rocky says, “I always lie.” Which type of an inhabitant is he?
 - (a) A
 - (b) B
 - (c) Either A or B
 - (d) The given statement is infeasible.
6. Peter says, “According to Rocky. I always speak the truth.” Which of the following is a correct conclusion?
 - (a) Peter has to be of type A
 - (b) Peter has to be of type B
 - (c) Rocky has to be of type A.
 - (d) Rocky has to be of type B.
7. Booker says. “Shane and I are of the same type.” Which of the following is a correct conclusion?
 - (a) Booker and Shane are necessarily of the same type.
 - (b) Shane has to be of type A.
 - (c) Booker and Shane cannot be of the same type.
 - (d) The given statement is infeasible.
8. Ramu says “Basu and I are of different types.” Which of the following is a correct conclusion?
 - (a) Ramu and Basu are of Type B and Type A respectively.
 - (b) Ramu and Basu cannot be of the same type.
 - (c) Basu has to be of Type B.
 - (d) Shyam has to be of Type B.
9. Shane says, “Booker and I are of different types.” Which of the following is a correct conclusion?
 - (a) Shane and Booker are of Type B and Type A respectively.
 - (b) Shane and Booker cannot be of the same type.
 - (c) Booker has to be of Type B.

- (d) None of these
10. Booker says, “At least one person among Shane and I always lies.” What types are Booker and Shane respectively?
- (a) B, A
(b) B, B
(c) A, B
(d) It is not possible to deduce.

Directions for Questions 10 to 12: Refer to the passage below and answer questions given below it.

The inhabitants of the Island of Dreams have very bright and interesting lives. Just as we earthlings have continuity in our daily lives, the inhabitants of the Island of Dreams have continuity in both their waking lives, as well as their dreams. As a result, the inhabitants of the Island of Dreams have great difficulty in knowing whether they are awake or asleep at a given time. However, the inhabitants can be classified into two broad types—Awakers and Asleepers.

An awaker is characterised by the fact that everything they believe while they are awake is true, and everything they believe while they are asleep is false. An Asleeper on the other hand, has the characteristic that everything he believes while asleep is true, and everything he believes while awake is false.

11. The Island has a President, a Prime Minister and an Entertainment Minister. At one point, the Entertainment Minister believed that his bosses were of different types. Twelve hours later, he changed his state (from sleeping to waking or from waking to sleeping), and he then believed that the President was an Awaker and the Prime Minister was an Asleeper. What type is the President?
- (a) Awaker
(b) Asleeper
(c) Could be either of the two types
(d) Data inconsistent
12. With reference to Question 11, what type is the Prime Minister?
- (a) Awaker
(b) Asleeper
(c) Could be either of the two types
(d) Data inconsistent
13. At one time, an inhabitant believed that he was both asleep and awake, what was he really?
- (a) Awaker
(b) Asleeper
(c) Could be either of the two types
(d) Data inconsistent

Directions On the Island of Who Went Where, there are only two kinds of people. **Type No** are those who, when they ask a question, must always get a ‘No’ for an answer and **Type Yes** are those who

must always get a 'Yes' for an answer to every question they ask. Based on this, answer Questions 14 to 16.

14. Victor and Trish are married. Victor asks you: "Are both of us of the type No?" You can conclude that
- (a) It is impossible for him to have asked such a question.
 - (b) Victor is a No.
 - (c) Trish is a No.
 - (d) His type cannot be identified.
15. Jay, Ajay and Vijay all approach you. Jay asks "Are at least two of us of the type No?" You can infer that
- (a) Jay is a No.
 - (b) Jay is a Yes.
 - (c) None of them is No.
 - (d) Cannot be determined.
16. Abhay, Lokesh, and Rituraj approach you. Abhay asks, "Is it true that neither Lokesh nor Rituraj can be Yes?" You can infer that
- (a) Both Lokesh and Rituraj are Nos.
 - (b) Abhay is a No.
 - (c) Abhay is a Yes.
 - (d) None of the above.

Answer Key

Type 1

1. (b)	2. (a)	3. (b)	4. (b)
5. (a)	6. (b)	7. (a)	8. (d)
9. (d)	10. (c)	11. (a)	12. (c)
13. (a)	14. (a)	15. (c)	16. (b)
17. (c)	18. (d)	19. (c)	20. (a)
21. (c)	22. (a)	23. (d)	24. (a)
25. (c)	26. (c)	27. (d)	

Type 2

1. (c)	2. (a)	3. (d)	4. (c)

5. (d)	6. (c)	7. (b)	8. (c)
9. (c)	10. (c)	11. (b)	12. (a)
13. (d)	14. (b)	15. (d)	16. (d)

Critical Reasoning (Paragraph Comprehension)

Q INTRODUCTION

Over the past ten years, Critical Reasoning (CR) questions have been a consistent presence in the CAT and other exams like XAT. The ability of the student to solve this question type depends on his/her ability to recognize and evaluate argumentative logic. The better you are at understanding arguments, the better you will be at questions related to critical reasoning. As a reader, you are likely to agree with the point that argumentation is essentially a social skill that depends on exposure and the logical ability to reason out, rather than on the knowledge of one particular language. Hence, doing well at CR questions depends more on your ability to reason out logically, than on your's specific knowledge of English.

This being so, CAT/MBA aspirants who consider themselves weak at the English section, should target these questions as possible scoring areas. Thus, strategically CR is one of the most important areas of the CAT exam.

A nice added benefit to preparing yourself for the critical reasoning questions on the CAT is that this preparation will also help you in your Management studies. Many of the techniques used to answer these test questions will come in handy when you are asked to do projects, case analyses and discussions in general.

Q WHAT IS CRITICAL REASONING?

The typical structure of CR questions is that of a short passage (mostly consisting of a single paragraph) followed by a question on the basis of the paragraph.

However, classifying them as short Reading Comprehension questions is not correct. They differ from Reading Comprehension in both the structuring of the passage and the types and variety of questions. The typical CR passage is anything between 50 words to 200 words long and necessarily contains an **argument**. As already mentioned in the chapter on Reading Skills Development, under Part I of this book, an argument will always have a **claim**, supported by **reasons/evidences**.

CHARACTERISTICS OF A CRITICAL REASONING PASSAGE

While writing argumentatively, the author's principal objective is to persuade the reader about his/her point of view. A successfully presented argument convinces the reader about the author's point of view. In order to do so, not only does the author have to present his point of view, but he also needs to support it with reasons—after all, the reader needs to know why he should agree with the author's points of view. Hence, the author has to provide enough support for his point of view in order to convince the reader. These supports may be in the form of reasons or evidences. The **supports** of an argument are also called as the **premises** of the argument.

The structure of the argument is:

Because of **these** (reasons or facts), we should conclude **this** (claim/conclusion).

Consider the following examples:



(A) Abortion should not be allowed **because** we have no right to kill a human life.

The opposite argument for statement (A) would be:

(B) Abortion should be allowed **because** a woman has the right to decide what she wants to do with her body.

(C) Smoking and chewing of pan masala should be banned **because** they are harmful to the health of the consumer.

All the above arguments are in the form: "This because of that".

Supports of an Argument

The supports of an argument can be visualised as the foundations on the basis of which arguments are made. They are similar to the foundations of a building—the stronger the foundation, the stronger the building. Similarly, the stronger the support for an argument, the stronger the argument.

Consider the following passage that appeared in a newspaper editorial. The passage below has a claim supported by reasons.

 Flexitime, or flexibility of working hours, has become popular amongst corporates in recent times. (*This is the claim*). Many corporates have found that flexitime has several advantages. The most obvious advantage is less absenteeism. When employees can choose working hours that meet their needs, they are less likely to take time off. Another advantage of flexitime is more efficient use of the business office. The additional hours that a company is "open for business" often converts into higher productivity and greater profits. Besides giving employees a choice of their working hours, it allows them to exert more control over their working environment. This leads to increased job satisfaction and less employee turnover.

Similarly, there could be a passage having a claim supported by facts. (Please recollect that 'Facts' are statements/information that can be physically verified. They might prove to be true or false on verification.) Consider the following passage:

 Country X's relations with Country Y have varied from being stormy and incordial at times to being icy cold and impersonal at other times. There have been periods in the histories of the two countries when their relationships have been dictated by the military maneuvers around their borders—for instance the times preceding the 1945, the 1957 and the Kampaundril wars—while at other times, the relationship has been cold and impersonal at best due to Country X's constant refrain that Country Y has been instigating terrorism within its borders.

Let us now look at some additional points that you need to keep in mind while reading for the conclusion and the supports in a paragraph:

1. Try to identify the conclusion sentence/s within a paragraph. Many a time the conclusion sentence will be indicated by the use of signal words. While reading a CR paragraph, look for such words. Some of them are: *therefore, thus, hence, so, in conclusion, as a result of, in*

short, in sum, the point is.

 The consumption of tobacco is harmful to the health of the individual. Hence, smoking should be banned.

 The signal word hence at the beginning of the second sentence, indicates the oncoming conclusion.

2. If no conclusion or main claim is stated, you can construct it by finding the main question which the essay directly addresses.

Let us now work out a few examples in spotting Conclusions and Reasons.

Directions: For each of the arguments given below, write down the conclusion and the reasons.

1. If any government becomes tyrannical, then the people governed under that government have a right to revolt. The government of France has become tyrannical. Therefore, the people governed by the government of France have a right to revolt against it.

Conclusion:

Reasons:

2. I don't care how many acting awards Salim Khan has won. He simply has no sense of acting. He looks like a dud in whatever roles he plays. Be it a romantic, action or a dramatic role, he simply is not able to act.

Conclusion:

Reasons:

3. If you haven't tried our Pack and Chew's Pastry, you simply must. It's the best pastry in town. We make it the home made way. Besides, it's good because we use vitamin enriched materials.

Conclusion:

Reasons:

Having recognized that every Conclusion-Reason passage is composed of an argument supported by its set of reasons/facts, we need to look at two additional components which underlie every argument (Hence which are a part and parcel of every CR passage)—viz. **Assumptions and Inferences**.

What are Assumptions?

An *assumption* is the passage's "must have." In other words, if the assumption is not true, it follows that the conclusion is not true.

Assumptions can be defined as additional unstated evidence/information, which bridges the gap between the argument, its evidence presented and the conclusion. In other words, you can also look at assumptions as additional information that the author has assumed the reader already knows while reading the argument. It is best explained through an example.

Argument: Since, India's time zone is five and a half hours ahead of GMT, we can conclude that India is to the East of the United Kingdom.

The unstated assumption here is that if the time of a country is ahead of the GMT, it lies to the east of the United Kingdom. Another, unstated assumption here is that the United Kingdom follows the GMT.

The assumption is a support to the argument, which must be true. Else the argument will fall apart. It

the best case, the argument is seriously weakened if the assumption that the author assumes is false.

How do we spot assumptions?

In order to deduce assumptions in an argument, you need to look for holes in the argument. Try to identify a missing support that would have the effect of providing a missing support to the argument. The author's belief about an unstated assumption is that it need not be explicitly stated. He believes that his reader will automatically assume the missing assumption. Hence, he does not feel the need to write it explicitly in the passage.

In order to find the hole, ask yourself the following question:

Is the evidence/supporting logic explicitly presented in the argument sufficient so as to support the argument? Is any additional evidence/supporting logic necessary to justify the argument? If yes, an assumption has been made.

Once you have identified a hole, your next objective is to try to word the additional evidence/supporting logic that you need to assume for the argument to make sense. For this purpose, ask yourself the following question:

What additional evidence/supporting logic do I as a reader, need to assume for the argument to make sense?

The answer to the above question gives you a possible assumption. Before you accept that assumption, however, you might need to test whether your assumed assumption is valid or not. In order to do so, try to **deny or negate** the assumption.

What happens when you negate the assumption? Does it weaken your argument?

If yes, then your assumption is correct, i.e., in case the assumption is not true, then the argument makes no sense. Hence, you have a valid assumption.

If no, then the assumption you have identified is not correct, i.e., the argument continues to make sense even if the assumption is not true. In such a case, you should realise that your assumption is wrong.

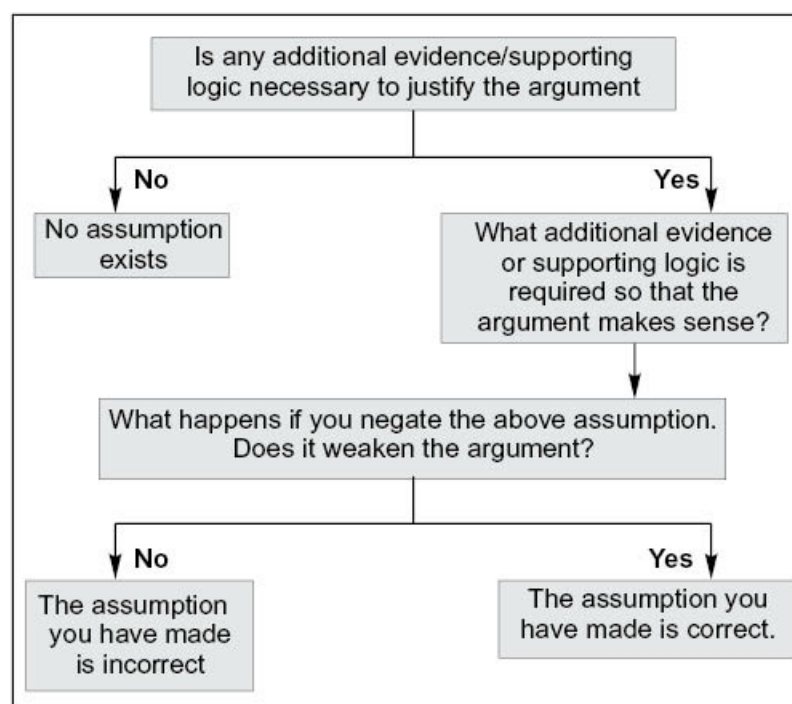


Fig. 5.1 Identifying an assumption in an argument

Let us now move on to the next issue—Inferences

What are Inferences?

An inference can be defined as an unstated extension of the argument. In other words, it can also be seen as an implied conclusion. The inference may be about the main point in the paragraph or it could be about a less central issue. This factor does not affect the fact that an inference is an implied conclusion.

The Cream of the Piece

Unlike assumptions which are the basis of the argument and hence, come before the argument, inferences come after the argument.

Figuratively speaking, imagine a 3 storey building as an argument. The assumptions can be seen as the foundation of the building. At the same time, an inference would be akin to the 4th storey of the building. While the building would not exist without a foundation, the shape and size of the 4th storey can be logically deduced from that of the third storey.

Further, unlike assumptions, which you have to find, an inference will show itself to you when you read the entire argument. Inferences emerge out of a combination of the statements in the paragraph. If all the statements in the passage are true, the inferences which emerge out of the combination of some or all of the statements must also be true.

The Cream of the Piece

The logic of an inference (or an implied conclusion) can be captured as follows:

If **A** (statement in a paragraph) and **B** (statement in the paragraph) are **true**, then **C** (inference or the implied conclusion) is automatically true.

Hence, in order to check whether the inference you have drawn is correct, try to deny the inference.

i.e. given that **A** and **B** are true, **C** need not be true.

If this logic can be justified, then the inference you might have drawn is incorrect. On the other hand, if this logic cannot be justified, then the inference is correct.

As a recap of this section, we would like to remind you that in order to be able to solve a CR question, you should be reading the CR paragraph with four basic objectives.

These are:

- (1) What is the claim/argument made by the author of the paragraph?
- (2) What are the supports the author is providing to the claim/argument?
- (3) What are the assumptions the author is making while making the claim/argument?
- (4) What unstated inferences/conclusions should you draw from the statements contained in the paragraph?

The principles elucidated above are principles associated with good reading of arguments. Initially, you will need to practice applying these principles consciously. Like any other activity, the more you apply these principles, the better you will become at them. You need to continue practicing these principles consciously till you feel that they have become a part of your reflexes. After that, all these principles will apply intuitively, i.e., you will be able to spot the claim, its supports, the assumptions as well as the inferences, as a reflex to the reading of the question. When you reach that stage, you

will realise that you have become good at solving CR questions.

We now move on to the typical question types asked under CR.

QUESTION TYPES IN CRITICAL REASONING

Critical reasoning questions will ask you to do any of the following:

- (1) Test for the strengthening of an argument with (a) additional evidence (b) additional reasons/arguments.
- (2) Test for the weakening of an argument with (a) additional evidence (b) additional reasons/arguments.
- (3) Identify an assumption.
- (4) Identify an inference.
- (5) Select the best concluding statement for a paragraph.
- (6) Summarise the argument.
- (7) Segregate relevant and irrelevant information.
- (8) Evaluate the method of the argument.
- (9) Identify the flaws/fallacies in an argument.
- (10) Identify Cause and Effect relationships.

Question type 1: The strengthening of an Argument

The claim of an argument is supported by reasons or evidences. In questions on strengthening of the argument, the question will ask you to select from amongst the four/five options, the one that strengthens the argument. Arguments can be strengthened in two ways: either through the introduction of some supporting evidence or the introduction of some supporting reasons. Hence, these questions might ask you to select an option that provides either supporting evidence or supporting reasons.

Besides, if we have an option that strengthens an assumption that is the key to the argument's claim, then that option will also strengthen the argument.

In a figurative sense, if you look at the argument as a building with supports, then supporting evidences/reasons provide us with additional supports to the claim of the question. In such questions, while evaluating the options, you should try to assess which option best supports the claim of the argument. The strengthening evidence/reason might be stronger/equal to/or weaker than the explicitly stated evidences/reasons in the argument. However, in order to find out the correct answer to such questions, you do not need to compare the quality of the support an option provides with respect to the explicitly stated supports. All you need to do is compare the respective options and try to see which option best supports the claim of the argument. By evaluating the relative strengths of the support provided to the claim of the argument, you can easily identify the correct option. The following question will make this question type clear to you.

 One of the most important and constructive reforms in National Politics has been the abolition of the post of State Ministers in the various departments.

Each of the following, if true, would strengthen the above argument, except

- (A) There are few, if any, specific duties or responsibilities assigned to the State Minister in any department.
- (B) A historian claimed that the post was "superfluous."

- (C) People of Cabinet Minister caliber normally refuse the post if offered a ministership in the guise of a state minister.
- (D) The office is used as a means of appeasing regional parties, by giving their MPs ministerial status and perks without giving them any significant responsibilities.

 The correct answer is B.

Question Type 2: The Weakening of an Argument

These questions are very similar to strengthening argument questions—the only difference being that they are on the other side of the fence. Similar to the strengthening of arguments, weakening of arguments can also be done by the introduction of additional evidence and/ or reasons that attack the basis of the claim of the argument.

After identifying the claim in an argument and the supports provided for the claim, you will need to evaluate each option for the degree to which it goes towards weakening the argument. The evidence/ reason that most/least seriously weakens, the supports of the argument's claim would be the answer (depending upon what you have been asked to identify).

In a figurative sense, the weakening evidence/reasons are like attacks on the pillars of the building—(i.e., they attack the supports of the argument's claim). Your judgment needs to tell you how serious the attack is.

Besides, if we have an option that weakens an assumption that is key to the argument's claim, then that option will also have the effect of weakening the argument. Let us look at a few examples that will make this question type clear to you:

 Before the arrival of a new trainer, the sales output in AMS Learning Systems Ltd. had been rising by 20% per year on the average over the past ten years. However, after new training innovations by the trainer (which included computerisation of training processes and reductions in the need for additional work force) annual sales output has only risen by 10% this year. It appears that Joe's innovations have caused the reduction in the annual growth rate.

Which of the following, if true, would most seriously weaken the conclusion above?

- (A) The investment in computerisation has a provision for depreciation of the cost of the computers.
- (B) Increases in selling price did not follow increases in the cost of the inputs.
- (C) The innovations brought in by the new trainer were intended as long-term investments and not made for short-term profit growth.
- (D) General demand for the training provided by the company has declined.

 The correct answer is D.

 In the past, to run for one's country in the Asiad was the ultimate achievement of any athlete. Nowadays, an athlete's motives are more and more influenced by financial gain, and consequently, we do not see our best athletes in the Asiad, which is still only for amateurs.

Which of the following will most weaken the above conclusion?

- (A) The publicity and fame that can be achieved by competing in the Asiad makes the athletes who do so, more "marketable" by agents and potential sponsors. Thus, they can earn a lot of money even while retaining their amateur status.
- (B) The spirit of the Asiad places emphasis on participation rather than on the winning of the race.
- (C) A leading columnist recently argued on the basis of concrete evidence that our best Asiad athletes already receive enough in terms of promotions and sponsorships.
- (D) It has been suggested that professional athletes should be allowed to compete in the games.

 The correct answer is A.

 In these times of growing economic turbulence, unless new reserves are found soon, the world's supply of natural gases is being

depleted in such a way that with demand continuing to grow at the present rates, reserves will be exhausted by the year 2200 AD.

Which of the following, if true, will most weaken the above argument?

- (A) There has been a slowdown in the rate of increase in world demand for natural gases over the last decade, from 20% to 10%.
- (B) It has been known for many years that there are vast stocks of natural gases under Antarctica, which have yet to be economically exploited.
- (C) Electricity is being used increasingly in place of natural gases for many industrial and domestic uses.
- (D) None of the above.

 The correct answer is D.

 In accordance with their powers, many *zilla panchayats* are introducing chlorination of the drinking water provided to families through the water supply system. This follows the conclusion of 10 years of research that the process ensures that children and adults receive the required intake of fluoride that will strengthen teeth. The maximum level has been set at one part per million. However, there are many who object, claiming that chlorination removes freedom of choice.

Which of the following will weaken the claim of the proponents of chlorination?

- (A) Chlorination over a certain prescribed level has been shown to lead to a general weakening of teeth.
- (B) There is no record of the long-term effects of drinking chlorinated water on dental and general health.
- (C) In a study done at the grassroots level, it was found that some people to be affected by chlorination claim that they have not had sufficient opportunity to voice their views about the issue.
- (D) Water already contains natural chlorine.

 The correct answer is B.

Question Type 3: Identify an Assumption

We have already looked at assumptions in details. This question type asks you to identify the assumption in the paragraph. The following examples will make it clear to you:

 In response to the criticism about the methods used by his poll predicting agency, a leading psephologist Mannooy Toy, replied: “I realise there are some shortcomings to the questionnaire method that we have applied to do the survey. However, since we have ensured that we send a copy of the questionnaire to every home in each of the constituency where we have carried out our survey, we believe the results to be quite representative..... We think the numbers received are so large that it overcomes the lack of a scientific approach that might have crept into our survey.

The writer of the above statement makes which of the following assumptions?

- (A) A high proportion of the respondents who have received the questionnaire have replied to the same.
- (B) A majority of the voters in the constituency live in homes.
- (C) The method of data collection used by the agency is unscientific.
- (D) A large, absolute number of replies automatically guarantees the accuracy of the results.

 The correct answer is D.

 A recent survey by a leading NGO came to the following conclusion about donor psychology:

If you are interested in getting a good donation, you need to realise that donors are almost never disturbed by being asked for too much. In fact, the result is the opposite—they are flattered. Besides, if you ask for too much, the donor can always suggest a smaller amount. On the other hand, if you ask for too little, the donor is usually offended. A common reaction to being asked too little is “so that’s all he thinks I’m worth.”

The above statement assumes that

- (A) Donors are usually never asked for enough.
- (B) A good fund raiser will value the worth of the donor.
- (C) It is worth the gamble to ask for large donations.

(D) None of these.

 The correct answer is C.

 New age problems require new age solutions. Further new age problems arise with new age populations and new age technologies. In order to find solutions to these problems we need to build new age institutions as well as new age political, economic and social mechanisms. Yet, institutions and political and economic mechanisms grow slowly and die slowly. Hence, new age institutions should be given every chance of trying to achieve success in their objectives.

The argument above rests on which of the following assumptions:

- (A) New age institutions are needed because old institutions are inefficient.
- (B) New age institutions are created in order to solve existing problems.
- (C) Over a course of time, as an institution grows, it has chances of succeeding in its objectives.
- (D) None of these

 The correct answer is C.

 In its quest to go global, once an Indian company has established an extensive sales network in a foreign market and therefore, has achieved substantial sales, it seems that these markets should be treated in a very similar fashion to those in India. It is therefore only in those countries where only initial sales networks have been developed, where marketing methods will have to differ from the methods applied in India.

The above statement assumes that:

- (A) Sales networks can be the same in both foreign countries and in India.
- (B) Extensive sales networks are preferable to less developed ones.
- (C) The markets of some countries will develop faster than others.
- (D) None of these.

 The correct answer is B.

 The main monetary policy objective is to reduce substantially, the import surplus of the coming years while resuming economic growth. Realisation of this goal entails a marked structural change of the economy, which can be brought about by freezing the standard of living (per capita private consumption plus public services) and restricting investments that do not further exports.

The writer of the above policy assumes that:

- (A) Economic growth will lead to structural changes in the economy.
- (B) If people consume less, the economy grows.
- (C) In order to reduce import surplus investment needs to be restricted.
- (D) People should be persuaded to give up consumption in order to achieve the national good.

 The correct answer is B.

 The reason that is most commonly quoted for nationalisation of foreign companies is a change in governance. Nationalisation tends to cover a wide range of industries and is not selective to the country of ownership of the foreign company.

The above statement assumes that:

- (A) Some critical industries are more likely to be nationalised than others which might not be so critical.
- (B) The process of nationalisation is not limited to any particular industry or country.
- (C) Nationalisation of businesses is so widespread as to cause concern at the international level.
- (D) Sharing ownership with local nationals will forestall takeovers by foreign governments.

Question Type 4: Identify an Inference/Conclusion

We have already discussed inferences and conclusions in details. Questions related to these will ask you to spot the option that is/is not an inference or a conclusion that can be drawn from the details mentioned in the paragraph. Consider the following examples, which will clarify to you how questions about inferences are structured:

 A pill that can induce abortions in pregnant women has become available in Australia. The drug Antiperphrine, has proved more than 98.9% effective in tests conducted by a scientific team in Sydney. The drug is an anti hormone and disrupts pregnancy by blocking the implantation of a fertilized egg in the wall of the uterus. In Australia, the pill will be available to women who are upto 42 days late in their menstrual cycle. The company that manufactures the pill, states however, that the pill is not a “morning after” pill for use as a contraceptive.

Which of the following statements can be correctly deduced from the text above?

- (A) The drug Antiperphrine uses a new type of contraceptive method.
- (B) The drug Antiperphrine blocks egg production.
- (C) The drug Antiperphrine has the effect of termination of pregnancy.
- (D) The drug is only available in Australia.

 The correct answer is C.

One of the most important measures of a country’s trading strength is the measurement of its net exports. Net exports are defined as exports less imports. It is important since the figure measures the net effect of a nation’s trade in goods and services vis-a-vis the world. In 1998, the country’s net exports were 7 percent of its GDP (Gross Domestic Product) and in 2005, they were 14 percent.

If the information above is accurate, which of the following must be true?

- (A) If GDP was constant from 1998 to 2005, net exports were greater in 2005 than in 1998.
- (B) Exports were greater than imports in 2005, but not in 1998.
- (C) Exports doubled from 1998 to 2005.
- (D) In 1998, net exports were lower than in 2005.

 The correct answer is A.

 About 40 percent of urban Indian husbands think it is a good idea for wives with school age children to work outside the home. Only about ten percent of rural Indian husbands approve of the same. Every second urban Indian wife, and one in four rural Indian wives with school age children has a job outside her home.

If the information above is correct, which of the following can be inferred?

- (A) Rural Indian families have more children than urban Indian families.
- (B) Employment opportunities for urban Indian wives are greater than for rural Indian wives.
- (C) Urban Indian husbands have a less conservative attitude than rural Indian husbands.
- (D) Rural Indian husbands would seem to be less satisfied about working wives who have school age children than urban Indian husbands.

 The correct answer is D.

 Paro overslept. Therefore, she was late for school by the time she got ready. Hence, she did not eat her breakfast. As she realised that she was late for her school bus, she ran as fast as she could from her home to the bus stop and did not see a banana skin that was lying on the ground in her path. She slipped on the banana skin and fractured her leg. Some passersby took her to the hospital and while lying in bed she was visited by her friend Dhanno, who wanted to know why she had got up so late.

Which of the following conclusions can be made from the above passage?

- (A) Because Paro did not eat her breakfast, she broke her ankle.
- (B) Paro's friend visited her in the hospital because she wanted to know why she was in the hospital.
- (C) Paro did not notice the banana skin because she overslept.
- (D) Paro's fractured leg meant that she did not go to school that day.

 The correct answer is D.

A recent study on medicine addiction found out that there are principally three main factors that determine the risk of becoming dependant on or addicted to medicines. The first factor is the type of medicine, the second is the personality of the individual, and the third factor is controlled by the circumstances in which the medicine is taken. As a parallel example, we only need to look as far as alcohol. While it could be safely said that the majority of the adult population have taken alcohol, yet only a small proportion of these go on to get addicted to alcohol. Besides, it is well documented that many strong medicines that have been used for medical purposes have not caused the patient to become addicted.

However, the study found that people who took medicines for the heck of it were more likely to become dependent on the same. The dependence need not be restricted to the physiological side but may become psychological, although the effects are still essentially the same. People with psychopathic, immature or otherwise unstable personalities were shown to be at the greatest risk of becoming addicted.

Which of the following conclusions can be drawn from the text?

- (A) One becomes addicted to certain medicines only if one has a weak personality.
- (B) Taking medicines for the fun of it increases the possibility of becoming dependent on medicines.
- (C) Alcohol is a safe medicine since very few people become dependent on it.
- (D) Long-term use of certain drugs for medical purposes does not cause addiction.

 The correct answer is B.

 An advertisement for a leading racquet manufacturer made the following claim:

The last five Wimbledon men's single champions have all changed to Head's new tennis rackets—the only racket that uses genuine nano technology in its frame. In that case, isn't now the time to add power to your tennis strokes and to trade in your old racket for a Head?

Which of the following claims is not made and cannot be inferred from the above ad?

- (A) Frames strengthened by nano-technology are used only in Head's new rackets.
- (B) Nano technology strengthened frames make tennis rackets stronger and allow the player to make more powerful strokes.
- (C) Former Wimbledon champions know a great deal about tennis and their equipment.
- (D) Head tennis rackets helped the last five Wimbledon men's' singles champions achieve their status.

 The correct answer is D.

Question Type 5: Select the Best Concluding Statement of a Paragraph

In this type of question, a paragraph is given and four alternative concluding statements are given for the same. You are required to choose the option that best concludes the paragraph. These questions first made their appearance in the CAT 2005 examination and sparked huge debates amongst the student community about their answers.

The reason for the confusion was that when read normally, each of the four options for the concluding sentence, logically followed the material of the text in the paragraph. However, in these questions the key to deducing the one correct option is the ability to understand the author's opinion (Advanced Reading Skill 5 from Part I of this book.). Once you have identified the author's opinion, you can evaluate the options for the concluding sentence by trying to fit in the one option that made the most

‘concluding sense’ in the context of the author’s opinion about the topic.

By trying to fit the concluding sense of each option, we mean to say that you need to compare how each sentence concludes the argument, i.e., winds up the points made by the author and best conveys the author’s opinion about the topic.

Further, the concluding sentence also needs to be a conclusion of the paragraph. It should not leave the scope of further carrying the paragraph’s discussion forward. The following examples will help you understand this type of question:

 Complete the following paragraph with the most suitable sentence.

In order to boost sales of toys at times other than the peak sale time, toy-manufacturers take recourse to the use of several techniques. Some of these include promoting character toys from Bollywood and Hollywood movies or TV series. All these sets are marketed as “collectibles” for the young consumers. The collections within a family of Collectibles, however, never appear to be complete (especially to the parents). As soon as all the characters are acquired, the child then requires the associated gadgets and gizmos that are bundled into the collectible set. Thus parents go shopping for the “car,” the “home,” the “mobile home,” and even the “airplane” to ensure a happy homely environment for the toys. Ultimately, just as the elusive final piece of the series is attained, the manufacturer and promoter release the next series of “collectibles.”

The prime aim of the manufacturer and promoter is to ensure that

- (A) all children should be happy and no child can be happy without a complete series of toys.
- (B) as soon as one set is complete or almost complete, then the next one arrives on the scene.
- (C) children should be encouraged to complete their collections of toys.
- (D) sales need to be artificially bolstered throughout the year.

 The correct answer is D.

 Let us now look at the following examples from the CAT 2005:

Federer’s fifth grand slam win prompted a reporter to ask whether he was the best ever. Federer is certainly not lacking in confidence, but he wasn’t about to proclaim himself the best ever. “The best player of this generation, yes” he said, “But nowhere close to ever. Just look at the records that some guys have. I’m a minnow.” _____

1. His win against Agassi, a genius of the previous generation, contradicts that.
2. Sampras, the king of an earlier generation, was as humble.
3. He is more than a minnow to his contemporaries.
4. The difference between ‘the best of this generation’ and ‘the best ever’ is a matter of perception.

 The correct answer is 3. You need an answer that concludes the passage. While options 1 & 2 take the paragraph into a new direction, 4 is irrelevant in the context provided—it is too general in nature.

 Thus the end of knowledge and the closing of the frontier that it symbolizes is not a looming crisis at all, but merely one of many embarrassing fits of hubris in civilization’s long industry. In the end, it will pass away and be forgotten. Ours is not the first generation to struggle to understand the organizational laws of the frontier, deceive itself that it has succeeded, and go to its grave having failed.

1. One would be wise to be humble.
2. But we might be the first generation to actually reach the frontier.
3. But we might be the first generation to deal with the crisis.
4. However, this time the success is not illusory.

 Options 2 & 4 seem to indicate that we might have reached the frontier. But by its very definition, the frontier of knowledge can never be reached. Hence, you can eliminate these answers. Further, if you consider option 3, it talks about dealing with the crisis—which does not exist at all according to the first sentence of the paragraph. Thus, the correct answer is Option 1.



Most firms consider expert individuals to be too elitist, temperamental, egocentric, and difficult to work with. Force such people to collaborate on a high stakes project and they just might come to fisticuffs. Even the very notion of managing such a group seems unimaginable. So most organizations will fall into default mode, setting up project teams of people who get along nicely.

1. The result however is disastrous.
2. The result is mediocrity.
3. The result is the creation of experts who then become elitists.
4. Naturally, they drive innovations.

The paragraph clearly states that teams are formed on the basis of people's ability to get along with each other (rather than on their merit with respect to the task at hand). Obviously, this leads to a compromise in the quality of the work being performed. Hence, Option 4 is eliminated. Option 1 simply does not follow from the previous sentence since the word *however* indicates that the author should be contradicting his previous idea with this sentence. However, if you analyse the ideas in the last sentence of the paragraph and the Option 1, you will clearly see that there is no contrast between the two ideas.

Option 3 talks about an effect that is highly improbable in the context. Option 2 is perfect since you will expect mediocrity when you create a team on the basis of parameters other than ability.

The audiences for crosswords and sudoku, understandably, overlap greatly, but there are differences, too. A crossword attracts a more literary person, while sudoku appeals to a keenly logical mind. Some crossword enthusiasts turn up their noses at sudoku because they feel it lacks depth. A good crossword requires vocabulary, knowledge, mental flexibility and sometimes even a sense of humor to complete it. It touches numerous areas of life and provides an 'Aha!' or two along the way. _____

1. Sudoku, on the other hand, is just a logical exercise, each one similar to the last.
2. Sudoku, incidentally, is growing faster in popularity than crosswords even among the literate.
3. Sudoku, on the other hand, can be attempted and enjoyed even by children.
4. Sudoku, however, is not exciting in any sense of the term.

In order to solve the above question, you need to understand that you are looking for the option that best 'completes' the paragraph. The structural construct under which we reach the last sentence of the paragraph is that of a comparison between crosswords and sudokus. The author has shown a clear bias towards crosswords—and in fact is in the process of explaining his sentence '*Some crossword enthusiasts turn up their noses at sudoku because they feel it lacks depth.*' So obviously, after praising crosswords, he has to talk in a dark light about sudoku. Option 1 has the perfect fit under this structure. Although Option 4 is also negative in its construction, it is unlikely to be the answer because of the fact that it is too crude and direct—something that you cannot associate with the author's style of writing. Options 2 and 3 get eliminated because they are talking positively about sudokus—something that goes against our expectations of what the author is likely to convey.

Question Type 6: Questions that Ask You to Summarise an Argument

This is another important question type which has been regularly seen in the CAT and other top Management Entrance Exams. A **summary** is defined as the reduction of a large amount of information to its most important points. You need to remember the following points about summarising in order to be able to spot summaries effectively:

- (1) While achieving a reduction of the passage into its summary, care is taken to ensure that the main idea of the passage is properly communicated—i.e., there is no compromise or dilution of the sense of the main idea communicated by the passage while framing the summary. The summary might have the main idea stated in the original words of the author or in fresh words which will essentially convey the same meaning. This factor should always be kept in mind while solving summary based questions. Hence, recognising the main idea of the passage while reading the original text for the first time is extremely crucial for identifying the correct summary.

A good process to follow in trying to recognise the summary is to go back to the questions:

- Who or what is the original text talking about? (Answer: TOPIC of the text); and
- What is the main idea about the topic that is being conveyed by the original text? (Answer: MAIN IDEA of the text)

Then, you go on to the alternative summaries available and ask the same questions again with respect to the proposed summary.

- Who or what is the summary talking about? (Answer: TOPIC of the summary) and;
- What is the main idea about the topic that is being conveyed by the summary? (Answer: MAIN IDEA of the summary.)

For the correct option, the two answers that emerge out of these questions should be exactly the same as the two answers that emerged out of the original text.

- (2) Significant reduction from the original text to the summary is generally achieved by either condensing or removing altogether the supporting details in the passage. In many cases, it is not even necessary to mention some of the details presented in the original paragraph in order to write a good summary.
- (3) Very often, authors of texts repeat the main idea several times while writing. This is done to ensure that their main idea is hammered into the minds of the reader several times and in several ways so that the gaps (if any) in understanding the main idea may be removed.

Needless to say, in the summary, the main idea will be written only once—and **that too in one sentence only**. Any repetitions of ideas present in the original text are removed from the summary.

Consider the following example:

 Jaya and Devika are both successful women who are also members of a socially disadvantaged section of the society. Jaya has a firm belief in positive discrimination. By positive discrimination she believes that the negative discrimination that society has subjected her section of the society which can only be offset through reverse discrimination. She believes that if positions of economic, social and political eminence, power and honor are offered principally to historically disadvantaged sections of society, then these groups will begin to play a more significant role in society today.

Devika, on the other hand, feels that she has succeeded in her chosen field of work on her hard work and on her own merits. She thinks that the principle of positive discrimination is flawed since it will result in the lowering of standards and decreases competition between similarly qualified personnel who will expect to achieve positions because of their factors other than rather than their suitability for the particular position.

Which of the following best sums up Jaya's argument?

- (A) Positive discrimination will encourage more people to apply for jobs, previously unavailable to them.
- (B) Positive discrimination will give extra opportunities to socially disadvantaged sections of the society.
- (C) Quality and professionalism will improve because of the greater number of positions held by members of minority groups.
- (D) Positive discrimination will remove deep rooted prejudices against the weaker sections of society from the work arena.

 The correct answer is B.

The Question Type 7: Questions that Ask You to Identify the Relevance of the Argument

Relevant information questions are framed with the objective of testing the student's abilities to understand the main idea of the passage. The student is expected to test various options for their relevance to the arguments presented.

A relevant piece of information can be defined as something that affects the argument—either positively by strengthening it or negatively by weakening it. The degree to which the argument is affected in either direction is not a factor while testing the relevance of the information.

In some cases, information is relevant to the argument simply because it has the effect of either elaborating or explaining or expanding the main point.

Obviously, when the argument is not affected by the information provided in any way, it becomes irrelevant in the context of the text provided.

 Another way in which you will have to test the reasonableness of an argument is by linking the information to how it helps you judge an assumption in the argument. Does the information whose relevance you have to judge have any effect on how reasonable an assumption underlying the argument is? Does it make the assumption more valid and reasonable? Does it reduce the reasonableness of the assumption of the argument? If the answer to either of these is yes, then it automatically makes the information reasonable.

Consider the following example:

A service oriented company, Bharadwaj Inc., included in its annual balance sheet and P&L accounts presented to its shareholders at its AGM, the following note on its policy of accounting:

Fixed assets are stated in the consolidated balance sheet at cost minus accumulated depreciation and amortization. Depreciation is provided on all fixed assets, except land. This is done to reflect the true value of the asset. The writing off of their cost is done by using the Straight Line Method of depreciation over the estimated economically useful lives of the respective assets.

The cost of leasehold improvements, if any, is amortized over the term of the remaining number of years of the lease in equal annual installments.

Which of the following statements is relevant to, but not consistent with, the above accounting policy?

- (A) The economic useful life of land and buildings is assumed to be 40 years, and Bharadwaj Inc., therefore, employs a depreciation rate of 2.5% per annum.
- (B) Bharadwaj Inc. include in their plant, equipment whose historical cost is Rs. 1.5 crore. This is mentioned at its historical cost itself, even though this equipment is more than 10 years old and the depreciation rate on plant and machinery has been 1.5% for many years.
- (C) The company spent Rs. 30 lakh on improving a building, which is leased. The period of the lease was seven years, but the lease must be renewed in two years time. The company provided for amortization at 50% of the amount for this year.
- (D) None of these

 The correct answer is B.

Question Type 8: Questions that Ask You to Evaluate the Method of the Argument

Questions based on the method of the argument, ask the student to identify the technique applied by the author of the argument in order to make his argument, i.e., the logic for the support of the claim that the author is making.

Method questions are normally general about the entire argument, but can be sometimes specific about a part of the argument.

Some examples of the kinds of options the method based questions might give

- (1) The author argues from a small sample to a large population.
- (2) The author compares two parallel events and argues on the basis of parallels and contrasts.
- (3) The author uses an analogy to present his case.
- (4) The author transfers a cause and effect relationship from one field to another.
- (5) The author uses an appeal to popular opinion in order to make his point.
- (6) The author is making a prediction based on the evidence from events of the past.

- (7) The author attacks the opponent rather than attacking his argument.
- (8) The author discusses two diverse issues by comparing commonalities between them.
- (9) The author makes an extrapolation of a personal experience into a general case.
- (10) The author argues from the specific to the generic.
- (11) The author argues from the generic to the specific.

In order to solve questions based on Method, ask yourself how the author has reached the conclusion and in what context each part of the evidence is presented.

 A famous judge stated that if murder is a worse crime than blackmail and blackmail is a worse crime than theft, then murder is a much worse crime than theft.

Which is a correct analysis of the above argument?

- (A) A case operating in one situation will also be operative in another situation, if both situations are characterised in identical terms.
- (B) A case that operates under certain conditions will surely be operative in other situations in which the same conditions are present in a more acute form.
- (C) A case that clearly expresses the purpose it was meant to serve will also apply in other situations in which the identical purpose may be served.
- (D) None of the above.

 The correct answer is D.

Question Type 9: Questions that Ask You to Identify the Flaws/Fallacies in an Argument

Flaw based questions are similar to method based questions. The only difference is that unlike in the case of method questions where the validity of the argument does not matter, in flaw based questions, the validity of the argument matters. You need to identify whether there is an error in the entire argument or whether it is in a specific part of the argument.

Consider the following questions based on flaws/fallacies in an argument.

 Roma: The number of accidents on state and national highways this year in the state of Karnataka, where the speed limit was lowered to fifty kmph an hour two years ago, is clear evidence that speed restrictions rigorously enforced, make drivers more aware of the dangers of going too fast.

Aamir: Wrong. If you take a close look at the records it will show you that the number of accidents has been falling ever since the introduction of newer and stricter penalties for traffic rules violations, which happened two years before the lowering of the speed limit.

Which of the following best describes the weak point in Roma's statement upon which Aamir focuses?

- (A) The decrease in highway accidents may be a temporary phenomenon.
- (B) The evidence Roma cites comes only from one area.
- (C) No exact statistics for freeway accidents are given by Roma.
- (D) Roma fails to provide concrete evidence to prove a direct causative relationship between the cause and the effect.

 The correct answer is D.

Question Type 10: Questions that Ask You to Identify Cause-Effect Relationships

Cause-effect relationships are commonly used in all types of argumentations. We have studied this in detail under Reading Comprehension as well as under the chapter on Paragraph Jumbles. Questions of this type will ask you to spot/reason out causal relationships between diverse events/phenomena. Look at the following question in order to get a clearer picture of such questions:

 In India in 1990, there were, on an average 14 deaths at birth (infant mortality) per 1,00,000 population. By 2000 there were 11, and by 2001, 8. Today, there are 5 deaths at birth per 1,00,000 population, and it is anticipated that the downward trend will continue.

Each of the following, if true, would help account for this trend except:

- (A) Medical care is more widespread and available.
- (B) More effective birth control methods have been implemented.
- (C) The number of pediatricians per 10,000 population has increased.
- (D) Midwifery has declined in favor of doctors.

 The correct answer is D.

GENERAL APPROACH FOR SOLVING CRITICAL REASONING QUESTIONS

The Cream of the Piece

Step 1: Read the question stem first. This will help you to decide what you are going to be looking for in the paragraph when you read it for the first time.

Step 2: Next read the passage, identifying the claim, the supporting reasons/evidence, the assumptions inherent in the argument and the inferences that can be made from the argument.

Step 3: Pre-phrase your answer—Knowing what you are going to be looking for while reading the options is helpful in order to get the correct answer. Then, check the options to see which one best fits your opinion.

ELEMENTARY PRACTICE EXERCISE

1. The best movie showing in the country right now is *Black and Red* —it has been in the #1 position for three weeks.
 - How can we weaken this argument?
 - How can we strengthen this argument?
2. All mammals have red blood. Therefore, deers have red blood.
 - If so, what is the “missing step,” or “hidden assumption?”
3. The Education Minister has recently suggested that all people should go to school for at least 15 years. However, this argument is clearly wrong since the minister himself is educated only upto the sixth class.
 - How can we weaken this argument?
 - How can we strengthen this argument?
4. It is a well accepted fact that in order to raise your scores in the CAT, you should study and practice the question types in the test a lot. However, Motilal used this strategy and he did not get the score that he wanted. Therefore, this strategy is not helpful.
 - How can we weaken this argument?
 - How can we strengthen this argument?
5. It is a commonly known fact that most people do not obey traffic signals when they drive on the roads. Isn't it very often that you have noticed people disobey signals and get away scotfree? We can therefore conclude that the system of traffic signals is entirely useless.

- How can we weaken this argument?
 - How can we strengthen this argument?
6. Frozen water is less dense than liquid water. Therefore, frozen water will float in liquid water.
- If so, what is the “missing step,” or “hidden assumption?”
7. The President has recently suggested adding fluoride to all public water sources. This is obviously a bad idea since many of the former communist and fascist countries also added fluoride to all their public water sources.
- How can we weaken this argument?
 - How can we strengthen this argument?
8. Four hours ago I had a bad cold and headache, so I took six Dercold tablets. I still have the cold and the headache. Therefore, Dercold is a useless medicine.
- How can we weaken this argument?
 - How can we strengthen this argument?
9. In an attempt to increase sales, HTR Ltd. implemented a new customer service policy that required all sales representatives to address all prospective clients by name. Within three months of this step, sales had risen by over 25%, something that had never happened in the company’s history. The new policy was therefore a success.
- How can we weaken this argument?
 - How can we strengthen this argument?
10. It is obvious to everyone who can reason that Einstein could not have formulated the theory of relativity. It is a common fact that Einstein did not receive a passing grade in math class as a child.
- What is the “missing step” or “hidden assumption” in this argument?
 - How can we weaken this argument?
 - How can we strengthen this argument?

PRACTICE EXERCISES

1. Oligopoly is the state where there are many competitors within a single market. The Pepsi Company realizes that its operations are in competitive industries.
Which of the following conclusions may be inferred from the above?
- (a) Pepsi’s market is not oligopolistic.
 - (b) Monopoly is defined as one seller in a market.
 - (c) The Pepsi Company has a lot of domestic competition
 - (d) The Pepsi Company is operating in an oligopolistic market.
 - (e) Monopoly and oligopoly are similar markets.
2. People in a South African tribe have observed that heavy rains are usually preceded by claps of thunder. They are convinced that the heavy rains are somehow caused by the claps of thunder.

Which of the following, if true, would weaken the tribals' conviction?

- (a) The temperature must fall below 20 degrees Celsius for both heavy rains and claps of thunder to occur.
- (b) The presence of rain bearing clouds is the reason for the heavy rains as well as the claps of thunder.
- (c) The tribals of the particular tribe are unscientific people prone to superstitions.
- (d) It is as yet to be proved that claps of thunder precede and hence, cause heavy rains.
- (e) Claps of thunder actually cause heavy rains.

3. Professor Krithileshwar Jhamb argued that the method of evaluation for teachers, used at IIM Bangalore where students evaluated the teachers, was not a valid measure of teaching quality. Students should fill out questionnaires at the end of the term when the courses have been completed.

Which of the following, if true, provides support for Professor Jhamb's proposal?

- (a) Professor Jhamb received low ratings from a majority of his students.
 - (b) Under the present system, students were made to evaluate their teachers' mid term.
 - (c) Students at IIM Bangalore are not interested in evaluating their teachers.
 - (d) The institution should have more methods to evaluate teachers.
 - (e) A new proposal for methods of evaluation is being decided.
4. PM Manmohan Singh lobbied for the inclusion of India amongst the set of ASEAN countries. This would help develop and liberalize trade with countries such as Japan, China and other prominent members of the ASEAN group.

Each of the following, if true, could account for the above, except:

- (a) The PM is up for re-election and needs to show results.
 - (b) The PM's United Party Alliance had promised the creation of new jobs in the economy.
 - (c) The inclusion of India in the ASEAN would be a major achievement on the economic and political front for Manmohan Singh.
 - (d) Being a shrewd economist, Manmohan Singh realised that trade agreements with prominent nations of the ASEAN would definitely lead to an increase in the trade deficit of the country.
 - (e) The IMF would punish the PM for such a deal.
5. "If the islanders are doomed to have local self governance—and it is the islanders who have determined this—then they should be ready to bear the negative consequences of local self governance," said a British colonist as he left the shores of the island he was governing.

Which of the following, if true, would weaken his argument?

- (a) Local rulers are always more interested in the development of their country than foreign colonists.
- (b) Local self governance is not child's play.
- (c) The islanders are equally qualified and competent, if not more than the colonists, to run their own government.

- (d) A group of islanders were against the transfer of power.
 - (e) The islanders were not working to form their own government.
6. Amrinder Singh is no big catch for the Tongress Party in Uttam Pradesh. Even though he is the brother of the Chief Minister of the opposing Bhrasthwadi Party, he himself has no political clout and was not even important organizationally for his own party.

Which of the following statements is inconsistent with the above?

- (a) Amrinder Singh is the brother of the present Chief Minister of Uttam Pradesh.
 - (b) The Bhrasthwadi Party and the Tongress Party are political rivals.
 - (c) Amrinder Singh is being touted as the next leader of the Bhrasthwadi Party.
 - (d) Amrinder Singh has not been interested in politics.
 - (e) Amrinder Singh is not treated as very important by his own party men.
7. Stock market analyst Dhirubhai Mehta: “We believe that company’s stock will appreciate at 35% a year for the next 10–12 years. The company just became the leader in its industry and we expect its sales to continue to grow at 8% a year over this period.”

Investor: “But how can the stock’s price be expected to grow more quickly than the company’s underlying sales?”

Which of the following facts would best support the stock analyst?

- (a) The company’s expenses will be declining over the next 5 to 10 years.
 - (b) The company just won a patent on a new product.
 - (c) Company A’s stock is currently overvalued by a significant amount.
 - (d) The company’s industry peer group is expected to experience stock appreciation rates of 30% over the same time horizon.
 - (e) The company is expecting some losses in the coming season.
8. A car magazine report: ‘The average mileage in the small car market was found to be 18 kilometers per litre. The average mileage was calculated by taking cars of all manufacturers in the segment, filling them with 10 litres of fuel and driving them along the Mumbai-Pune expressway. However, for the Karuti, the mileage was 22 kilometers per litre. Clearly, if you want to buy a new car, you should buy the Karuti.’

Which of the following assumptions does the magazine make?

- (a) The reader is interested in buying a car.
 - (b) Mileage is the sole consideration for the readers of the magazine who intend to buy a car.
 - (c) No other car in the segment had a mileage better than the Karuti’s mileage.
 - (d) None of these.
 - (e) The readers might also look for other factors as comfort, etc.
9. For the above question, which of the following additional information makes the argument stronger?
- I. Petrol prices have touched the sky, and hence the reader should be primarily interested in saving on fuel costs while purchasing a new car.
 - II. Besides mileage, Karuti scored the best on 9 out of 10 performance indicators used by

the survey.

III. The article is titled—"Your first Car"

- (a) I and II
- (b) II and III
- (c) II only
- (d) All of these
- (e) None of these

10. Per-capita income in India last year was Rs 17,600. Real median income for female headed families was Rs. 38,000. Therefore, women wage-earners are paid more than the national average.

Which of the following would, if true, weaken the above conclusion?

- (a) Only a small proportion of the total wage earners are women family heads.
- (b) In 99 percent of the cases, families headed by a female included other wage-earners.
- (c) Average income is significantly different from median income.
- (d) All of these.
- (e) None of these

11. The head of the NCAER was quoted as saying that the Consumer Price Index (CPI) will go down next month because of a recent drop in the price of petrol and steel.

Which of the following cannot be inferred from the statement?

- (a) The cost of petrol and steel has gone down sharply.
- (b) Consumption of petrol and steel has gone up.
- (c) Petrol and steel are major items in the CPI.
- (d) The changes in the cost of petrol is reflected quickly in the CPI.

12. "There has been a high incidence of traffic accident related deaths last year." Hence, the chairman of the CBDT suggested that excise taxes on cars and automobiles should not be reduced as planned by the government.

Which of the above statements weakens the argument above?

- (a) Although there was a high incidence of traffic accident related deaths last year, it was not significantly higher than the previous years.
- (b) Compulsory insurance covered most physical damage to automobiles and property.
- (c) A Government of India report has shown that the demand for automobiles was highly inelastic.
- (d) It was found in a study that an inadequate road network accounted for 30% of the accidents last year.
- (e) Higher prices would definitely deter lawyers.

13. The Incandescent brand fruit juice claims to be the most original fruit juice available on the market today. To prove this claim, the company marketing Incandescent called 10 people and asked them about their thoughts on fruit juices available on the market today. Nine of them stated that they unequivocally drink Incandescent brand fruit juices on a regular basis because

it is closest to the taste of real fruits.

Which of the following would most weaken this argument?

- (a) The Incandescent brand fruit juice is highly addictive.
- (b) The 10 people called were related closely to top executives of the company.
- (c) Most people prefer cola drinks to fruit juices. Here, Incandescent is a poor third to Coke and Pepsi.
- (d) The 10 people were selected at random.
- (e) All of these

14. For the above question, which of the options actually strengthen the argument?

- (a) (a) and (b)
- (b) (c) and (d)
- (c) (d) only
- (d) (a) and (d)
- (e) (a), (b) and (d)

15. Chewing tobacco has many benefits. However, the primary benefits occur in the area of mental health. The habit originates in a search for contentment. The life expectancy of our people has increased greatly in recent years; it is possible that the relaxation and contentment and enjoyment produced by tobacco chewing has lengthened many lives. Hence, Chewing Tobacco is beneficial.

Which of the following, if true, would weaken the above conclusion?

- (a) The government earns millions of dollars from the sales of chewing tobaccos
- (b) The evidence cited in the statement covers only one example of the effects of tobacco chewing
- (c) There is as yet no statistical evidence to prove a link between chewing and longevity.
- (d) None of these.
- (e) Chewing tobacco satiates the longing in a person.

16. Which of the following if true would best support the above argument?

- (a) Chewing tobacco has proved to be less harmful than smoking.
- (b) In a survey of 100 people, it was found that people who chewed tobacco had longer lives than people who drank Pepsi.
- (c) A study conducted by the National Institute of Health Research found a link between chewing tobacco and longevity.
- (d) Chewing tobacco leads to happier individuals. Happiness is proven to be a cause for longevity.
- (e) None of these.

17. Many of the junk foods on the market today, doughnuts, burgers and pizza, have less nutrients than natural foods, which were dominant a decade or two ago. Many nutritionists claim that pizza and doughnuts give less nourishment than natural foods. A spokesman of a leading junk food Company—Pizza House —stated recently that an examination of grade-school students

shows less nutritional deficiency than in their parents' time. Hence, junk foods are not as bad as made out to be.

Which of the following, if true, would tend to strengthen the view of the spokesman?

- (a) Grade school children reported eating no breakfast at all.
- (b) Fewer junk foods were available to the parents.
- (c) Adults claim to eat junk foods as well as natural foods.
- (d) Both (b) and (c).
- (e) Only (a) and (c).

18. My neighbour, Mr. Kohli's dogs bark and howl every time he lets them outside. My class teacher told me that dogs tend to bark and howl when they see other dogs eating biscuits sitting in their owner's laps. I personally believe they bark and howl because they enjoy disrupting my meditations.

Which of the following can be inferred from the preceding passage?

- (a) Mr. Kohli lets out his dogs very often.
- (b) The dogs are always howling and barking to disturb neighbours.
- (c) The dogs enjoy being outside.
- (d) Mr. Kohli's dogs bark and howl whenever they are outside.
- (e) None of these.

19. The argument for liberalization which answers the worries of the left parties about the possible trade deficits created by the opening up of the Indian economy goes thus: 'In today's economic scenario, where there are many trading countries, the trade between two specific countries need not be balanced. The differing demands of goods and services and the differing productive capabilities of the same among different countries will cause a country like India to have trade deficits with some countries and surpluses with other countries. On the whole, the trade deficits and surpluses will balance out in order to give a trade balance'.

Which of the following conclusions best summarises the argument presented in the passage above?

- (a) Left parties need not worry about trade deficits in India since its trade will always be in balance even though it runs a deficit with a single country.
- (b) India's trade deficits and surpluses with other countries always balance out.
- (c) The left parties in India should not be concerned about India's trade deficits with specific countries because they will balance out in the long run.
- (d) None of these.
- (e) Only (a) and (b).

20. Most citizens are very conscientious about observing a law when they can see the reason behind it. For instance, there has been very little need to actively enforce the recently-implemented law that increased the penalty for godmen duping people of their money by playing with their emotions. This is because citizens are very conscientious about duping someone in the name of religion, as it leaves their religious gurus with a bad name.

Which of the following statements would the author of this passage be most likely to believe?

- (a) The increased penalty alone is a significant motivation for most citizens to obey the law.
- (b) There are still too many inconsiderate citizens in the society.
- (c) Godmen should not be allowed to play with the emotions of the people.
- (d) Society should make an effort to teach citizens the reasons for its laws.
- (e) People would be more likely to listen to genuine religious gurus than self proclaimed godmen.

21. Throughout the first decade of the 21st century, net increases in Indian direct investments in the Far East (funds outflows) exceeded net new Far East direct investment in India.

Each of the following, if true, could help to account for this trend except:

- (a) Land values in the Far East were increasing at a faster rate than in India.
- (b) Labour mobility was higher in India than in the Far East.
- (c) The cost of labour (wages) was consistently lower in the Far East than in India.
- (d) Corporate liquidity was lower in India than in the Far East.
- (e) Labour and land values were increasing at a faster rate in the Far East.

22. Inflation can only be fundamentally caused by two factors—Supply side factors and demand side factors. These factors are either reductions in the supply of goods and services or increases in demand due to either the increased availability of money or the reallocation of demand. Unless other compensating changes also occur, inflation is bound to result if either of this occurs. In economies prior to the introduction of banks (a pre banking economy) the quantity of money available, and hence, the level of demand, was equivalent to the quantity of gold available. If the statements above are true, then it is also true that in a pre banking economy

- (a) any inflation would be the result of reductions in the supply of goods and services.
- (b) if other factors in the economy are unchanged, increasing the quantity of gold available would lead to inflation.
- (c) if there is a reduction in the quantity of gold available, then, other things being equal, inflation would result.
- (d) Whatever changes in demand occur, there would be compensating changes in the supply of goods and services.
- (e) All of the above.

23. Which of the following best completes the argument below?

One effect of the FM radio was a collapse in the market for audio cassettes. Formerly, people had to buy audio cassettes in order to listen to their favorite music, but the advent of FM radio changed all that by ‘giving people music on tap’. Similarly, the introduction of crops genetically engineered to be resistant to pests will

- (a) increase the size of crop harvests.
- (b) increase the cost of seeds.
- (c) reduce demand for chemical pesticides.

(d) reduce the value of farmland.

(e) None of the above.

24. Most large retail stores of all goods and brands hold discount sales in the month of November. The original idea of price reduction campaigns in November became popular when it was realized that the sales of products would generally slow down following the Diwali rush, were it not for some incentive. The lack of demand could be solved by the simple solution of reducing prices.

There is now an increasing tendency among major chains of stores across the country to have their “November sales” begin before Diwali. The idea behind this trend is to endeavor to sell the maximum amount of stock at a profit, even if that may not be at the maximum profit.

Which of the following conclusions cannot be drawn from the above?

- (a) The incidence of “early” November sales results in lower holdings of stocks with the corollary of lower stock holding costs.
- (b) Demand is a function of price; as you lower price, demand increases.
- (c) Major stores seem to think it makes sense to have the November sales campaigns pre-Diwali.
- (d) The major department stores do not worry as much about profit maximisation as they do about sales maximisation.
- (e) A price cut offers an incentive to buy for the customs.

25. Of the world’s largest AIDS cases countries in 2010, three had the same share of world AIDS patients as they had in 2000. These three countries may serve as examples of countries that succeeded in holding steady their share of the AIDS disease.

Which of the following, if true, would most seriously undermine the idea that these countries serve as examples as described above?

- (a) Of the three countries, two had a much larger share of world AIDS incidence in 2000 than in 2010.
- (b) Countries should strive to reduce their share of the total AIDS patients in the world rather than try to hold it constant.
- (c) The three countries have different rates of population growth.
- (d) None of these.

26. In a famous experiment at the IISC campus, when a cat smelled milk, it salivated. In the experiment, a bell was rung whenever food was placed near the cat. After a number of trials, only the bell was rung, whereupon the cat would salivate even though no food was present. Such behaviour has been observed in other animals such as dogs, monkeys, etc. and is a vital input for training domesticated animals.

Which of the following conclusions may be drawn from the above experiment?

- (a) Cats and other animals can be easily tricked.
- (b) The ringing of a bell was associated with food in the mind of the Cat.
- (c) A conclusion cannot be reached on the basis of one experiment.
- (d) Two stimuli are stronger than one.

27. At a rally in the Moinul Haque Stadium, candidate Laloo exclaimed: "Nearly everyone at the rally is behind me. It looks like I am going to be elected."
- Which of the following statements, if true, best supports the above conclusion?
- (a) Laloo's opponent also appeared at the rally.
 - (b) The rally was attended by almost all the residents of Laloo's constituency.
 - (c) Laloo was never defeated in an election.
 - (d) Laloo was supported by the MLA.
 - (e) Laloo was an undesirable candidate.
28. Ram is a terrible driver. He has had at least five traffic violations in the past year.
- Which of the following can be said about the above claim?
- (a) This is an example of an argument that is directed against the person making an argument rather than the argument itself.
 - (b) The argument is fallacious because it contains an illegitimate parallelism.
 - (c) The above argument obtains its strength from a similarity of two compared situations.
 - (d) The argument is built upon an assumption that is not stated but is concealed.
29. Since the late 1970s, there has been a dramatic decline in the incidence of traditional childhood diseases such as chicken pox, in India. This decline has been accompanied by an increased incidence of scleroid malaria, a hitherto rare viral infection among children. Few adults, however, have been affected by the disease. Which of the following, if true, would best help to explain the increased incidence of scleroid malaria among children?
- (a) Hereditary factors determine in part, the degree to which a person is susceptible to the virus that causes scleroid malaria.
 - (b) The decrease in traditional childhood diseases and the accompanying increase in scleroid malaria have not been found in any other country.
 - (c) Children who contract chicken pox develop an immunity to the virus that causes scleroid malaria.
 - (d) None of these.
 - (e) Children who get a rubeolla infection don't get chicken pox.

Questions 30 and 31 are based on the following:

An annually conducted nationwide survey by a leading health research organization, shows a continuing marked decline in the use of illegal drugs like hashish and charas by high school seniors over the last five years.

30. In using the results of the survey described above, in order to make conclusions about illegal drug use in the teenage population as a whole, which of the following, if true, casts most doubt on the relevance of the survey results?
- (a) Because of cuts in funding, no survey of illegal drug use by high school seniors will be conducted next year.
 - (b) Another survey found an increase in the rate of smoking amongst the high school seniors.
 - (c) Illegal drug use by teenagers is highest in those areas of the country where teenagers are

least likely to stay in high school for their senior year.

- (d) The proportion of high school seniors who say that they strongly disapprove of illegal drug use has declined over the last three years.
 - (e) Both (a) and (c).
31. Which of the following, if true, would provide most support for concluding from the survey results described above that the use of illegal drugs by people below the age of 20 is declining?
- (a) Another survey found an increase in the rate of smoking amongst the high school seniors.
 - (b) In the past, high school seniors were consistently the population group most likely to use illegal drugs and most likely to use them heavily.
 - (c) The percentage of high school seniors who use illegal drugs is consistently very similar to the percentage of all people below the age of 20 who use illegal drugs.
 - (d) Both (b) and (c).
 - (e) All of (a), (b) and (c).
32. The local education authorities in India have recently issued a “prescribed” list of books that are approved for reading in schools by children aged between 5 and 11.
- A furor has arisen among many parents because an authoress by the name of Pooja Mehta, very popular with children, has been omitted from the said list. When asked to comment on the omission, the head of the committee that was responsible for preparing the list of books said that the books of Mrs Pooja Mehta have been omitted because “we thought they are of an inferior quality and do not sufficiently stimulate the children’s intellectual ability and not because they contain characters which are stereotypes or may show racial prejudice.”
- Which one of the following statements can be inferred from the above paragraph?
- (a) There was an opinion that Mrs Mehta’s books were omitted because they contained characters that were stereotypes or showed racial prejudice.
 - (b) The parents’ view is that Mrs Pooja Mehta’s books might have been left off the list because some of her characters were racist.
 - (c) Mrs Pooja Mehta was popular with children and parents because she included stereotype characters in her books.
 - (d) None of these.
 - (e) Mrs. Pooja Mehta’s speciality was the ability to write about racial prejudice.
33. All televisions emit sounds. And all radios emit sounds. Therefore, I conclude that all televisions are radios.
- The argument above is invalid because
- (a) the writer bases his argument on another argument that contains circular reasoning.
 - (b) the writer has illogically classified two disparate groups together when there is no relationship between them, except that they both have the same attribute.
 - (c) the writer has made a mistaken analogy between two dissimilar objects.
 - (d) the writer has failed to express his reasoning fully.

- (e) The writer has failed to express a relation between the two objects.
34. In elections in a democratic set up, the proper role of the press is to cover only those factors in the campaign which bear on the eventual outcome. Since the outcome is invariably a victory for the candidate of one of two major parties, the press should not cover the campaigns of candidates of minor parties. The argument above relies on which of the following assumption ?
- (a) It is unlikely that there will be more than three candidates in any given race.
 - (b) Candidates of minor parties will never win elections.
 - (c) The number of votes cast for a candidate of a minor party is not likely to affect the outcome of the contest between the candidates of the two major parties.
 - (d) Both (b) and (c).
 - (e) None of the above.
35. The daily journey from his home to his office takes Shyam on an average fifty five minutes by car. Shyam learns about a different route from a neighbour. This route is longer in distance, but will only take thirty five minutes on the average, because it contains stretches of roads where it is possible to drive at higher speeds. Shyam 's only consideration apart from the time factor, is the cost. He calculates that his car will consume 10% less gasoline if he takes the suggested new route. Shyam decides to take the new route for the next two weeks as an experiment.

If the above were the only considerations, which one of the following may have an effect on the decision Shyam has made?

- (a) Major road work is begun on the shorter distance route, which holds up traffic for an extra ten minutes. The project will take six months, but after it, the improvements will allow the journey to be made in half an hour less than at present.
 - (b) Re-routing of heavy vehicular traffic from the shorter route to a new route, is expected to reduce the amount of traffic to one third of the current levels
 - (c) Shyam finds a third route which is slightly longer than his old route, but shorter than the suggested route.
 - (d) Both (a) and (b).
 - (e) Shyam suffers from an eye problem which makes it difficult for him to drive longer distances.
36. The cost of housing in many urban parts of India has become so excessive that many young couples, with above-average salaries, can only afford small apartments. EMI and rent commitments are so huge that they cannot consider the possibility of starting a family since a new baby would probably mean either the mother or father giving up a well-paid position—something they can ill afford. The lack of or great cost of child-care facilities further precludes the return of both parents to work.
- Which of the following adjustments could practically be made to the situation described above which would allow young couples to improve their housing prospects?
- (a) Encourage couples to remain childless.

- (b) Encourage couples to have one child only.
 - (c) Encourage young couples to move to cheaper areas for living.
 - (d) None of these is likely to have an impact on the current situation.
 - (e) Both (a) and (c).
37. By the early 1990s, the services sector contributed approximately 20 percent of India's GDP. Still, no coherent system of rules, principles, and procedures exist to govern the service sector.
- Which of the following best summarises the argument?
- (a) Regulatory systems lag behind reality.
 - (b) A regulatory system ought to reflect the importance of the service sector.
 - (c) India's GDP was five times its service sector.
 - (d) None of these.
 - (e) The service sector contributes insignificantly to the GDP.
38. In 1980, Uttam Pradesh earned Rs. 17 million in tourist revenue. By 1990, tourist revenue doubled and in 2000, it reached the sum of Rs. 132 million.
- Each of the following, if true, may explain the trend in tourist revenue except:
- (a) The number of tourists has increased from 1940 to 1980.
 - (b) Average expenditure per tourist has increased.
 - (c) Average stay per tourist has increased.
 - (d) The number of total hotel rooms has increased.
 - (e) Only (a) and (b).
39. Following the massive earthquake in Gujarat, building rules in Gujarat required all apartment buildings constructed after 2002 to have earthquake resistant designs.
- From which of the following can the statement above be inferred?
- (a) Apartment buildings built after 2002 had to be earthquake resistant.
 - (b) All apartment buildings built in Gujarat after 2002 have to have earthquake resistant designs.
 - (c) Some apartment buildings constructed before 2002 had earthquake resistant designs.
 - (d) Both (a) and (b).
 - (e) Building rules require the buildings to have fixed number of floors.
40. In 1980, the average per capita telephone consumption in India was one telephone per hundred people. By 2005, the figure became one telephone per 8 people.
- Each of the following, if true, could explain this trend except:
- (a) The cost of owning telephones has gone down to one fifth of its earlier values.
 - (b) There has been a privatisation of the telecom sector in the 1990s.
 - (c) Getting a telephone connection has been simplified, and waiting lines have been eliminated.
 - (d) There has been an increase in affluence and disposable income amongst the country's

vast middle class.

(e) Only (a) and (b).

Answer Key

1. (d)	2. (b)	3. (b)	4. (d)
5. (c)	6. (c)	7. (a)	8. (b)
9. (c)	10. (d)	11. (b)	12. (c)
13. (b)	14. (c)	15. (c)	16. (c)
17. (b)	18. (d)	19. (d)	20. (d)
21. (d)	22. (b)	23. (c)	24. (a)
25. (b)	26. (b)	27. (b)	28. (d)
29. (c)	30. (c)	31. (c)	32. (a)
33. (b)	34. (d)	35. (a)	36. (c)
37. (b)	38. (d)	39. (b)	40. (b)

Section 3

Reasoning Exercises Based on Level of Difficulty

-
-  Level of Difficulty (LOD)—I
 -  Level of Difficulty (LOD)—II
 -  Level of Difficulty (LOD)—III
-

Level of Difficulty (LOD)—I

Directions for Questions 1 to 5: These questions are based on the following information. Study it carefully and answer the questions.

Seven athletes Ojasvi, Pandey, Qamar, Sachin, Virbhadra, Xenon and Zavi represent different countries in the Olympic games held in Paris. The countries they represent are India, Italy, Malaysia, Nepal, Pakistan, Sri Lanka and Egypt; each one competes for a different sport viz. Judo, Hockey, Weight Lifting, Wrestling, Swimming, Cycling and Basketball. The order of persons, countries and the games is not necessarily the same i.e. the orders of athlete, country and sports have been purposely jumbled in the above lists.

Qamar represents Italy in Hockey. Sachin represents India but not in Judo and neither in Weight Lifting. Someone from amongst the seven athletes represents Egypt and he/she competes in Swimming. Virbahdra competes in Judo but not for Malaysia. Ojasvi represents Sri Lanka in Cycling. The athlete from Pakistan competes in Wrestling. Xenon does not represent Malaysia or Egypt. Zavi competes in Weight Lifting.

1. The one who competes in Weight Lifting, represents which country?
 - (a) Nepal
 - (b) Malaysia
 - (c) Egypt
 - (d) India
2. Which of the following combinations is correct?
 - (a) Xenon-Wrestling-Nepal
 - (b) Zavi-Weight Lifting- Egypt
 - (c) Ojasvi-Wrestling-Sri Lanka
 - (d) Xenon-Wrestling-Pakistan
3. Who represents India?
 - (a) Virbhadra
 - (b) Zavi
 - (c) Xenon
 - (d) None of these

4. For which game does Sachin compete?
(a) Swimming (b) Basketball
(c) Wrestling (d) cannot be determined
5. Virbhadra represents which country?
(a) Malaysia (b) Pakistan
(c) Egypt (d) None of these

Directions for Questions 6 to 10: Study the following information carefully to answer these questions.

Anil, Pritam, Sudesh, Rashmi, Mitali, Gitali and Yukta are sitting around a circle facing the centre. Anil is third to the left of Yukta and to the immediate right of Rashmi. Pritam is second to the left of Gitali who is not an immediate neighbour of Mitali.

6. Who is to the immediate left of Pritam?
(a) Mitali (b) Sudesh
(c) Yukta (d) Cannot be determined
7. Who is second to the right of Rashmi?
(a) Anil (b) Mitali
(c) Pritam (d) Sudesh
8. Which of the following pairs of persons has the first person sitting to the immediate right of the second person?
(a) Rashmi-Mitali (b) Anil-Gitali
(c) Sudesh-Pritam (d) None of these
9. Which of the following groups has the first person sitting between the other two?
(a) Mitali-Anil-Gitali
(b) Sudesh-Rashmi-Gitali
(c) Yukta-Pritam-Rashmi
(d) None of these
10. Which of the following is the correct position of Anil with respect to Pritam?
(I) Second to the left
(II) Third to the left
(III) Fifth to the right
(IV) Fourth to the right
(a) (I) only
(b) (II) only

(c) Both (I) and (II)

(d) Both (I) and (III)

Directions for Questions 11 to 15: Study the following information carefully to answer these questions.

Abhi, Binoy, Chintan, Dev, Esha, Freni and Gautam are members of the Genesis sports club. Each of them plays one of seven different games: Cricket, Swimming, Trekking, Kabbadi, Snooker, Chess and Golf but not necessarily in the same order. Each one of them plays a different musical instrument from amongst Shehnai, Drum, Harmonium, Flute, Sarod, Manjira and Sarangi not necessarily in the same order. Binoy plays Cricket and Manjira. Esha likes to play Kabbadi but not Harmonium or Sarod. The one who plays Snooker plays Shehnai. Freni plays Drums but does not Swim or play Golf. Abhi treks and plays Flute. The one who plays Golf does not play Sarod. Gautam plays the sport of Snooker and Chintan plays Harmonium.

11. Who plays the Sarod?

(a) Dev

(b) Abhi

(c) Esha

(d) Dev or Esha

12. Esha plays which game?

(a) Swimming

(b) Golf

(c) Chess

(d) None of these

13. Which of the following combinations of game-person-musical instrument is definitely correct?

(a) Trekking — Binoy — Flute

(b) Swimming — Esha — Sarangi

(c) Golf — Dev — Sarod

(d) Swimming — Dev — Sarod

14. Who plays Chess?

(a) Chintan

(b) Dev

(c) Gautam

(d) Freni

15. Who is the swimmer?

(a) Chintan

(b) Freni

(c) Dev

(d) Cannot be determined

Directions for Questions 16 to 20: Study the following carefully and answer the questions.

Atul, Binish, Charlie, Danish, Emy, Furqan, Gopal and Hina are sitting around a circle, facing the centre. Emy and Gopal always sit next to each other. Danish sits third to the right of Charlie. Furqan sits to the left of Hina. Charlie never sits next to Atul while Danish never sits next to Gopal. Hina is not the neighbour of Danish and Charlie while Danish is not the neighbor of Furqan.

16. Who sits to the immediate right of Furqan?

- (a) Danish (b) Charlie
(c) Binish (d) None of these
17. Three of the following are alike in a certain way based on their positions in the seating arrangement and so form a group. Which is the one that does not belong to that group?
(a) Charlie Hina (b) Binish Atul
(c) Furqan Emy (d) Atul Gopal
18. Which of the following pairs sits between Binish and Emy?
(a) Hina Binish (b) Furqan Danish
(c) Binish Gopal (d) Gopal Charlie
19. Who sits second to the left of Binish?
(a) Furqan (b) Gopal
(c) Atul (d) Emy
20. Who sits between Atul and Danish?
(a) Binish (b) Emy
(c) Charlie (d) Nobody

Directions for Questions 21 to 26: Study the following information carefully and answer the questions.

Anu, Bhavesh, Chintu, Durgesh, Esha, Farman, Ganesh and Hitesh are sitting around a circle, facing the centre. Anu sits fourth to the right of Hitesh while second to the left of Farman. Chintu is not the neighbour of Farman and Bhavesh. Durgesh sits third to the right of Chintu. Hitesh never sits next to Ganesh.

21. Who amongst the following sits between Ganesh and Durgesh?
(a) Ganesh (b) Farman
(c) Hitesh (d) Anu
22. Which of the following pairs sit between Esha and Farman?
(a) Bhavesh Hitesh (b) Esha Farman
(c) Chintu Esha (d) Durgesh Bhavesh
23. Three of the following are alike in a certain way based on their positions in the seating arrangement and so form a group. Which is the one that does not belong to that group?
(a) Durgesh Chintu (b) Hitesh Farman
(c) Bhavesh Durgesh (d) Ganesh Esha
24. Who is to the immediate left of Anu?
(a) Chintu (b) Durgesh
(c) Ganesh (d) Data inadequate

25. Who sits second to the right of Durgesh?
- (a) Anu (b) Chintu
(c) Bhavesh (d) Esha
26. Which is the position of Farman with respect to Esha?
- I. Second to the right
II. Sixth to the left
III. Third to the left
IV. Fifth to the right
- (a) Only II
(b) Only II and III
(c) Only I and IV
(d) Both III and IV

Directions for Questions 27 to 31: Study the following information carefully to answer these questions.

Seven Friends Gimi, Harish, Javed, Kandarp, Luv, Moni and Nitin are working in different cities viz Kolkata, Lucknow, Chandigarh, Gandhinagar, Delhi, Agra, Bhopal not necessarily in the same order. Each one of them has a different profession from amongst Teacher, Photographer, Auditor, Fashion Designer, Builder, Choreographer and Painter not necessarily in the same order.

Harish is a Choreographer and he works in Gandhinagar. Kandarp is a Photographer and he does not work in Kolkata. The Teacher works in Lucknow. Moni works in Delhi. The Painter works in Bhopal. Luv is a Builder and he works in Chandigarh. Gimi is a Fashion Designer. Javed does not work in Lucknow.

27. Who is the Auditor?
- (a) Javed (b) Nitin
(c) Kandarp (d) Moni
28. Which of the following combinations of person, profession and city is definitely correct?
- (a) Gimi—Fashion Designer—Chandigarh
(b) Kandarp—Painter—Bhopal
(c) Luv —Builder—Lucknow
(d) None of the above
29. Who is working in Lucknow?
- (a) Javed (b) Kandarp
(c) Moni (d) Nitin
30. The Fashion Designer works in which city?

(a) Agra

(b) Kolkata

(c) Lucknow

(d) Chandigarh

31. Who is the builder?

(a) Nitin

(b) Javed

(c) Moni

(d) None of these

Directions for Questions 32 to 35: Study the following information carefully to answer these questions.

Seven actors Om, Puri, Qadir, Ruk Ruk, Sanjay, Tina and Usman from a TV show have to visit seven different places for the promotion activity of their show. The places to be visited are: Agra, Mumbai, Indore, Chandigarh, Bhopal, Bangalore and Gandhinagar. The order of actors and cities may not be necessarily the same. Each one is supposed to fly by a different airline Go air, Kingfisher, MDLR Airlines Express, Jetlite, Air Deccan, Indigo Airlines, MDLR Airlines, not necessary in the same order.

Qadir goes to Mumbai but not by MDLR Airlines Express or Jetlite Airlines. Ruk Ruk flies to Bangalore by MDLR Airlines. The one who goes to Gandhinagar does not travel by Air Deccan or MDLR Airlines Express. Sanjay travels by Air Deccan. Om does not go to Agra. Tina travels by Go Air to Bhopal. Puri goes to Chandigarh by Kingfisher. Sanjay does not go to Agra. Usman does not go to Gandhinagar.

32. Who travels by MDLR Airlines Express Airlines?

(a) Om

(b) Qadir

(c) Usman

(d) Cannot be determined

33. Who goes to Gandhinagar?

(a) Om

(b) Sanjay

(c) Usman

(d) Ruk Ruk

34. The one who travels by Air Deccan, visits which place?

(a) Agra

(b) Indore

(c) Chandigarh

(d) Bangalore

35. Which of the following is actor- city- airline combination is definitely true:

(a) Om- Gandhinagar- Indigo

(b) Puri- Chandigarh- MDLR Airlines

(c) Ruk Ruk – Bangalore – MDLR Airlines

(d) Tina – Bhopal - Indigo

Directions for Questions 36 to 40: These questions are based on the following information. Study it carefully to answer the questions.

Seven officers Lina, Mini, Nita, Pia, Queen, Rita and Sumant work in three different shifts I, II and I

with at least two persons working in each shift. Each one of them has a different weekly off from Monday to Sunday not necessarily in the same order. Mini works in the second shift only with Rita whose weekly off is on Friday. Queen's weekly off is on the next day of Lina's weekly off and both of them work in different shifts. Pia works in the third shift and her weekly off is on Saturday. Sumant has a weekly off on Monday and he works in the first shift. The one who has a weekly off on Sunday works in the first shift. Lina and Pia do not work in the same shift, Lina's weekly off is on Tuesday.

36. Whose weekly off falls on Sunday?

- (a) Lina
- (b) Mini
- (c) Cannot be determined
- (d) None of these

37. Which of the following combinations of shift, person and weekly off is definitely correct?

- (a) II, Mini, Saturday
- (b) III, Nita, Thursday
- (c) III, Pia, Sunday
- (d) I, Lina, Tuesday

38. Whose weekly off is on Thursday?

- (a) Lina
- (b) Mini
- (c) Nita
- (d) Queen

39. On which day is Sumant's weekly off?

- (a) Monday
- (b) Wednesday
- (c) Sunday
- (d) Tuesday

40. Which of the following group of officers work in shift I?

- (a) Lina, Nita, Sumant
- (b) Lina, Sumant
- (c) Nita, Sumant
- (d) Lina, Pia, Sumant

Answer Key

1. (a)	2. (d)	3. (d)	4. (b)
5. (d)	6. (a)	7. (b)	8. (d)
9. (b)	10. (d)	11. (a)	12. (d)
13. (d)	14. (d)	15. (c)	16. (d)
17. (a)	18. (d)	19. (a)	20. (d)
21. (d)	22. (a)	23. (a)	24. (c)

25. (c)

26. (d)

27. (d)

28. (d)
29. (d)

30. (b)

31. (d)

32. (d)
33. (a)

34. (b)

35. (c)

36. (d)
37. (d)

38. (b)

39. (a)

40. (a)

Solutions

Solutions to Questions 1 to 5: After reading the first paragraph you would get the following structure for the grid:

Athlete	Country	Sport
Ojasvi		
Pandey		
Qamar		
Sachin		
Virbhadra		
Xenon		
Zavi		

Your first focus in the second paragraph should be to first fill in the direct clues into the grid. You get the following grid after using the clues:

Qamar represents Italy in Hockey. Sachin represents India. Virbahdra competes in Judo. Ojasv represents Sri Lanka in Cycling. Zavi competes in Weight Lifting.

Athlete	Country	Sport
Ojasvi	Sri Lanka	Cycling
Pandey		
Qamar	Italy	Hockey
Sachin	India	
Virbhadra		Judo
Xenon		
Zavi		Weightlifting

At this point the following clues are left to be used:
Sachin represents India (used) but not in Judo and neither in Weight Lifting. Someone from amongs

the seven athletes represents Egypt and he/she competes in Swimming. Virbahdra competes in Judo (used) but not for Malaysia. The athlete from Pakistan competes in Wrestling. Xenon does not represent Malaysia or Egypt.

Also, the countries/sports and country/sport combinations still to be filled in are: Malaysia; Pakistan-wrestling; Egypt- Swimming; Nepal; Basketball.

Also, from the grid we have reached at this point of our solving, we know that the two combinations of country sport listed above have to be allocated to Pandey and Xenon. Based on this, we can make the following deductions which would help us complete the solution grid:

Deduction i): Sachin cannot be matched with Swimming or Wrestling. This leaves only Basketball for Sachin.

Deduction ii): Zavi and Virbahdra cannot be from either Pakistan or Egypt. Hence, they must be from either Malaysia or Nepal. Further, it is given to us that Virbahdra is not from Malaysia. Hence, we can pair Virbahdra for Nepal and Zavi for Malaysia.

Deduction iii): At this point, we are only left with deciding about the combinations of Egypt—Swimming AND Pakistan—Wrestling and allocating these between Pandey and Xenon.

Since, we know that Xenon does not represent Egypt, we can easily decide the following combinations:

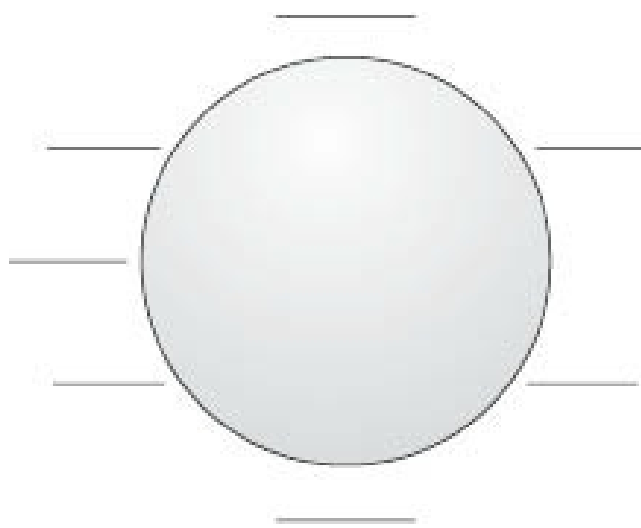
Pandey—Egypt—Swimming & Xenon—Pakistan- Wrestling.

Athlete	Country	Sport
Ojasvi	Sri Lanka	Cycling
Pandey (Deduction iii)	Egypt	Swimming
Qamar	Italy	Hockey
Sachin	India	Basketball (Deduction i)
Virbahdra	Nepal (Deduction ii)	Judo
Xenon (Deduction iii)	Pakistan	Wrestling
Zavi	Malaysia (Deduction ii)	Weightlifting

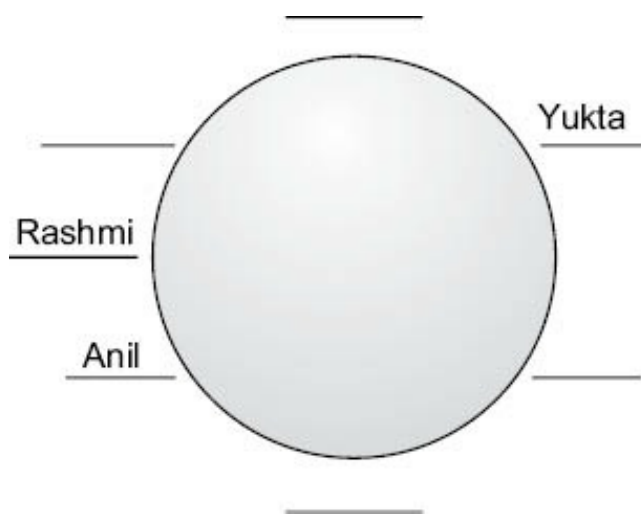
The answers for questions 1 to 5 can be read off the table:

1. Zavi who competes in weightlifting represents Nepal.
2. Option (d) can be seen to be correct.
3. It can be seen that it is Sachin who represents India. Option (d) is correct.
4. Sachin competes in Basketball. Option (b) is correct.
5. Virbahdra represents Nepal. Option (d) is correct.

Solutions to Questions 6 to 10: Based on the information in the question we can start off with a circular figure with 7 blank seats as shown below.

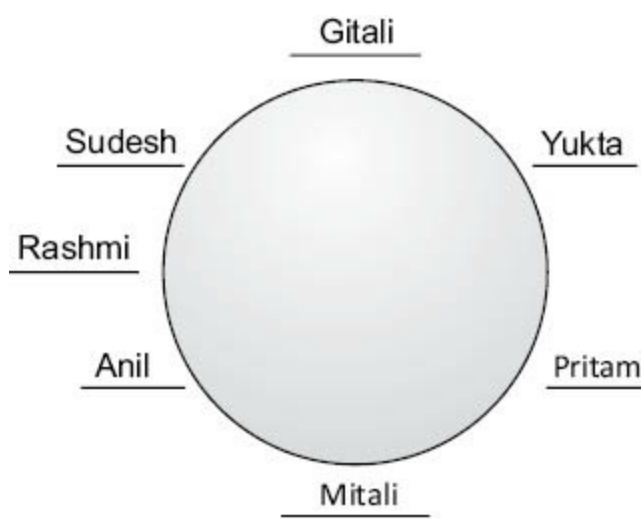


Based on the clue “Anil is third to the left of Yukta and to the immediate right of Rashmi” we get:



From this point we can use the clue:

“Pritam is second to the left of Gitali who is not an immediate neighbour of Mitali.” This gives us only one way to complete the seating arrangement as shown below:



The answers can then be read off the final seating grid.

- 6. Mitali is to the immediate left of Pritam. Option (a) is correct.
- 7. Mitali is second to the right of Rashmi. Option (b) is correct.
- 8. None of the given pairs satisfies the condition. Option (d) is correct.

9. Sudesh is sitting between Rashmi and Gitali. Option (b) is correct.

10. Anil is second to the left and fifth to the right of Pritam. Option (d) is correct.

Solutions to Questions 11 to 15: The starting grid for this question would look as follows:

Name	Sport	Musical Instrument
Abhi		
Binoy		
Chintan		
Dev		
Esha		
Freni		
Gautam		

After using the direct clues we get the following position in the solution grid:

Name	Sport	Musical Instrument
Abhi	Trekking	Flute
Binoy	Cricket	<i>Manjira</i>
Chintan		Harmonium
Dev		
Esha	<i>Kabaddi</i>	
Freni		Drums
Gautam	Snooker	<i>Shehnai</i>

At this point in our solution, we have to still fit in the following sport/musical instrument or Sport-musical instrument combination.

Swimming; Chess ; golf; *Sarod* and *Sarangi*.

From this point the following deductions help us get to the final answers:

Deduction 1: Since Esha does not play *Sarod*, she must be playing *Sarangi*. Consequently, Dev plays *Sarod*.

Deduction 2: Since Freni does not swim or play golf, her sport must be Chess.

The grid would become as follows:

Name	Sport	Musical Instrument
Abhi	Trekking	Flute
Binoy	Cricket	<i>Manjira</i>

Chintan		Harmonium
Dev		<i>Sarod</i>
Esha	<i>Kabaddi</i>	<i>Sarangi</i>
Freni	Chess	Drums
Gautam	Snooker	<i>Shehnai</i>

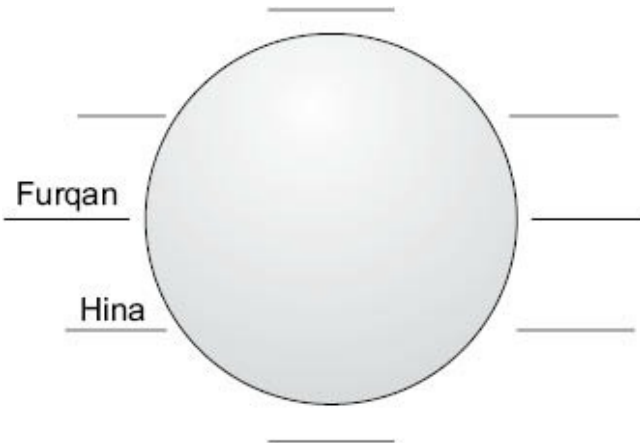
Now, since the one who plays golf does not play Sarod, Golf can only go to Chintan. The final table will look as follows:

Name	Sport	Musical Instrument
Abhi	Trekking	Flute
Binoy	Cricket	<i>Manjira</i>
Chintan	Golf	Harmonium
Dev	Swimming	<i>Sarod</i>
Esha	<i>Kabaddi</i>	<i>Sarangi</i>
Freni	Chess	Drums
Gautam	Snooker	<i>Shehnai</i>

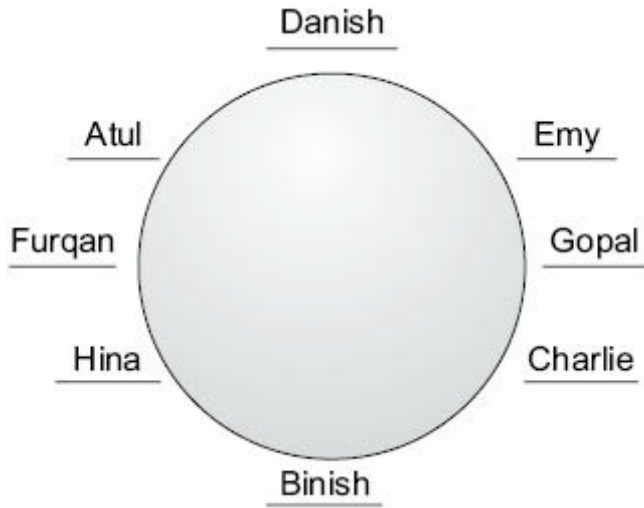
The answers can now be read off the above table:

- Dev plays *Sarod*. Option (a) is correct.
- Esha plays *Kabaddi*. Option (d) is correct.
- Option (d) is correct.
- Freni plays Chess. Option (d) is correct.
- Dev is the swimmer. Option (c) is correct.

Solutions to Questions 16 to 20: Since there are 8 people sitting around the circle, we can look at creating the following picture:



From this point, if we use the clue: Danish sits third to the right of Charlie & Hina is not the neighbour of Danish and Charlie we get only the following possible placement for the eight people.

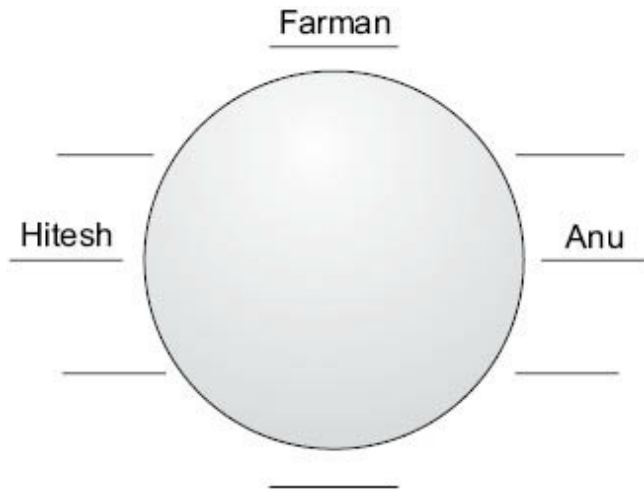


The answers can be read off the above figure.

- 16. Hina sits to the right of Furqan. Option (d) is correct.
- 17. Apart from the pair of Charlie- Hina, in each of the other pairs the second person is sitting 3 places to the left of the first person. Option (a) is the one that does not belong to the group and hence option (a) is correct.
- 18. Option (d) is the correct answer.
- 19. Option (a) is correct.
- 20. Option (d) is correct.

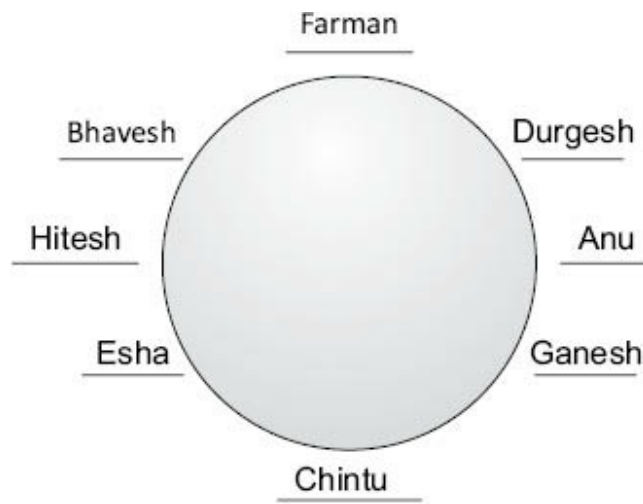
Solutions to Questions 21 to 26:

From the clue: Anu sits fourth to the right of Hitesh while second to the left of Farman we get:



From this point if we further use the clues that:

Chintu is not the neighbour of Farman and Bhavesh & Durgesh sits third to the right of Chintu we would have only one position to place Chintu and Durgesh in. Subsequently, the other people would each have only a single position to get placed in. The solution would be as shown by the figure given below:



The answers to Questions 21 to 26 can then be read off the final solution figure:

- 21. Anu sits between Ganesh and Durgesh. Option (d) is correct.
- 22. Hitesh and Bhavesh sit between Esha and Farman. Option (a) is correct.
- 23. Apart from the Durgesh Chintu pair, all other pairs are separated only by one person in between them. Hence, option (a) is correct.
- 24. Ganesh is to the immediate left of Anu. Option (c) is correct.
- 25. Bhavesh sits second to the right of Durgesh. Option (c) is correct.
- 26. Farman is third to the left of Esha and is also fifth to the right of Esha. Option (d) is correct.

Solutions to Questions 27 to 31: The starting grid in this question (after using the direct information in the question) would look as follows:

Person	City	Profession
Gimi		Fashion Designer
Harish	Gandhinagar	Choreographer
Javed		
Kandarp		Photographer
Luv	Chandigarh	Builder
Moni	Delhi	
Nitin		

At this point we have to place the following:

Kolkata, Lucknow, Agra, Bhopal, Auditor, Painter and Teacher.

Amongst these, we also know the following pairs are mandatory:

Teacher- Lucknow; Painter-Bhopal (& these have to be placed under Javed and Nitin).

The following deductions help us finalise the grid:

Deduction 1: Javed does not work in Lucknow – hence the Teacher – Lucknow pair has to be filled under Nitin and the Painter- Bhopal pair has to be filled under Javed.

Deduction 2: Kandarp does not work in Kolkata- hence he can only work in Agra while Gimi must be working in Kolkata. The finalized grid would look as below:

Person	City	Profession
Gimi	Kolkata	Fashion Designer
Harish	Gandhinagar	Choreographer
Javed	Bhopal	Painter
Kandarp	Agra	Photographer
Luv	Chandigarh	Builder
Moni	Delhi	Auditor
Nitin	Lucknow	Teacher

The answers are:

- 27. Moni is the auditor. Option (d) is correct.
- 28. None of the given combinations is correct. Option (d) is correct.
- 29. Nitin is working in Lucknow. Option (d) is correct.
- 30. Option (b) is correct.
- 31. Luv is the builder. Option (d) is correct.

Solutions to Questions 32 to 35: After putting the given data in, the appropriate grid for this question would look as follows:

Actor	City	Airline
Om		
Puri	Chandigarh	Kingfisher
Qadir	Mumbai	
Ruk Ruk	Bangalore	MDLR Airlines
		<i>Contd</i>
Sanjay		Air Deccan
Tina	Bhopal	Go Air
Usman		

At this point, the missing pieces pertain to the following cities/ Airlines:

Cities left: Agra, Indore, Gandhinagar

Airlines left: Indigo Airlines, MDLR Airlines Express, Jetlite.

Since we know that Agra cannot be Om and neither Sanjay, it leaves us only Usman who can go to

Agra. Also, the one traveling to Gandhinagar does not travel by Air Deccan. This can only mean that Air Deccan (and Sanjay) must be going to Indore and hence, Om would be going to Gandhinagar. Since, Om is going to Gandhinagar, he cannot be going by MDLR Airlines Express. The table converts to the following (Note: We are not able to resolve the exact airline used by Om, Qadir and Usman.)

Actor	City	Airline
Om	Gandhinagar	Indigo/ Jetlite
Puri	Chandigarh	Kingfisher
Qadir	Mumbai	
Ruk Ruk	Bangalore	MDLR Airlines
Sanjay	Indore	Air Deccan
Tina	Bhopal	Go Air
Usman	Agra	

The answers can be read off this table:

- 32. It can be either Qadir or Usman. Hence, option (d) is correct.
- 33. Om goes to Gandhinagar. Option (a) is correct.
- 34. Sanjay who goes by Air Deccan visits Indore. Option (b) is correct.
- 35. Option (c) is correct.

Solutions to Questions 36 to 40: The ideal starting grid structure for this question would be:

	Shift I	Shift II	Shift III
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

We have direct information about the shifts of Mini, Pia, Rita and Sumant. We also have direct information about the weekly offs of Sumant, Rita and Pia. Placing this information into the above table we would get:

	Shift I	Shift II	Shift III

Monday	Sumant off	Rita, Mini	Pia
Tuesday	Sumant	Rita, Mini	Pia
Wednesday	Sumant	Rita, Mini	Pia
Thursday	Sumant	Rita, Mini	Pia
Friday	Sumant	Rita off, Mini	Pia
Saturday	Sumant	Rita, Mini	Pia
Sunday	Sumant	Rita, Mini	Pia off

At this point we should be thinking about the following:

- (i) The shifts and weekly offs for Lina, Nita and Queen & (ii) the weekly off for Mini (iii) We also realize that of the remaining 3 people who have to be allocated to shifts, each of them has to be allocated only to either shift I or shift III (as it is given that Shift II has only Mini and Rita.)
- (iv) Of the remaining 3 people whose shifts have to be decided, two would need to go into any one of the two remaining shifts while the third would go to the other shift. Thus, between shifts I and III, one of them would have to have 2 people working in it while the other shift would have 3 people working in it.
- (v) The weekly offs for 4 people – hence for four days is still not known. These are Tuesday, Wednesday, Thursday and Saturday.

In order to move ahead in completing the table we have:

Lina and Pia do not work in the same shift – meaning that Lina should be working in Shift I and her weekly off is Tuesday. Also, Queen’s weekly off being on the next day to Lina’s weekly off, her weekly off must be on Wednesday. Further Queen should be working in a shift different from Lina—so since Lina is in shift I, Queen would be in Shift III. (Remember that shift II has been completely filled up).

With this information placed the solution grid would become as below:

	Shift I	Shift II	Shift III
Monday	Sumant off, Lina	Rita, Mini	Pia, Queen
Tuesday	Sumant, Lina off	Rita, Mini	Pia, Queen
Wednesday	Sumant, Lina	Rita, Mini	Pia, Queen off
Thursday	Sumant, Lina	Rita, Mini	Pia, Queen
Friday	Sumant, Lina	Rita off, Mini	Pia, Queen
Saturday	Sumant, Lina	Rita, Mini	Pia off, Queen
Sunday	Sumant, Lina	Rita, Mini	Pia , Queen

At this point in our solution:

We still need to place Nita and her weekly off, as well as decide on Mini’s weekly off. We still need to decide whose weekly off between Nita and Mini is on Thursday and whose is on Sunday. We also need to decide the one shift that has 3 people working. (Note: Since there are 7 officers and 3 shifts with a minimum of 2 officers per shift- it means that one of the shifts would have 3 officers and the other two would have 2 officers each.)

The clue that helps us decide on these unknowns in the table is:

The one who has a weekly off on Sunday works in the first shift.

This means that Mini cannot have her weekly off on Sunday—hence her weekly off is on Thursday. Also, Nita must be a first shift worker and her weekly off is on Sunday. The solution grid gets completed as below:

	Shift I	Shift II	Shift III
Monday	Sumant off, Lina, Nita	Rita, Mini	Pia, Queen
Tuesday	Sumant, Lina off, Nita	Rita, Mini	Pia, Queen
Wednesday	Sumant, Lina, Nita	Rita, Mini	Pia, Queen off
Thursday	Sumant, Lina, Nita	Rita, Mini off	Pia, Queen
Friday	Sumant, Lina, Nita	Rita off, Mini	Pia, Queen
Saturday	Sumant, Lina, Nita	Rita, Mini	Pia off, Queen
Sunday	Sumant, Lina, Nita off	Rita, Mini	Pia , Queen

The answers can now be read off the above table:

- 36. It is Nita whose weekly off is on Sunday. Option (d) is correct
- 37. Option (d) is correct.
- 38. Mini’s weekly off is on Thursday. Option (b) is correct.
- 39. Option (a) is correct.
- 40. Option (a) is correct.

Level of Difficulty (LOD)—II

Directions for Questions 1 to 5: The staff of AMS Careers presently consists of three senior faculty—A, B and C and five junior faculty—U, V, W, X and Y. Mr Arun Sharma, CEO of AMS Careers, is planning to open a new office in another city using two senior faculty and three junior faculty of the present staff. To do so he plans to separate certain individuals who do not function well as a team. The following guidelines were established to set up the new office:

- (i) *Since U and X have been competing for promotion, they should not be a team.*
- (ii) *Senior faculty A and C are constantly finding fault with one another and should not be sent to the new office as a team.*
- (iii) *C and V function well alone but not as a team. Hence, they should be separated.*
- (iv) *U and X have not been on speaking terms for many months. They should not be put together.*

1. If A is to be moved as one of the senior faculty, which of the following cannot be a possible working unit?
 - (a) ABUVY
 - (b) ABVWY
 - (c) ABUXY
 - (d) ABVXY
2. If C and W are moved to the new office, how many teams are possible?
 - (a) 1
 - (b) 2
 - (c) 3
 - (d) 4
3. If C is sent to the new office, which member cannot go with C?
 - (a) B
 - (b) U
 - (c) V
 - (d) X
4. Given the conditions in the passage, which of the following must go to the new office?
 - (a) B
 - (b) U

(c) V

(d) T

5. If U goes to the new office, which of the following is/are true?

(i) X cannot go with him

(ii) A cannot go with him

(iii) B is another faculty to go with him

(a) (i) only

(b) (iii) only

(c) Both (i) and (iii) only

(d) None of these

Directions for Questions 6 to 10 A wooden cuboid of dimensions $9 \times 7 \times 5$ unit is painted in a fixed pattern.

(i) The two opposite faces in the front and back are painted in red with 9×7 cuts.

(ii) The other two opposite faces on the sides are painted in green with 9×5 cuts.

(iii) The remaining top and bottom faces are painted in blue.

The cuboid is cut into 315 small cubes.

6. How many cubes have all the three faces coloured?

(a) 8

(b) 32

(c) 24

(d) None of these

7. How many cubes have two faces coloured?

(a) 60

(b) 142

(c) 105

(d) None of these

8. How many cubes have one face coloured?

(a) 142

(b) 105

(c) 71

(d) None of these

9. How many cubes have no face coloured?

(a) 142

(b) 60

(c) 105

(d) None of these

10. How many cubes have two faces coloured, that too Red and Green?

(a) 14

(b) 28

(c) 32

(d) None of these

11. While Balbir had his back turned, a dog ran into his butcher shop, snatched a piece of meat off the counter and ran out. Balbir was mad when he realised what had happened. He asked three other shopkeepers, who had seen the dog, to describe it. The shopkeepers really didn't want to help Balbir. So each of them made a statement which contained one truth and one lie.

(i) Shopkeeper number 1 said: “The dog had black hair and a long tail.”

(ii) Shopkeeper number 2 said: “The dog had a short tail and wore a collar.”

(iii) Shopkeeper number 3 said: “The dog had white hair and no collar.”

Based on the above statements, which of the following could be a correct description?

(a) The dog had white hair, short tail and no collar.

(b) The dog had white hair, long tail and a collar.

(c) The dog had black hair, long tail and a collar.

(d) The dog had black hair, long tail and no collar.

12. Three tribes live on a remote island Rokas Phokas. The Greenies always tell the truth. The Fishmongers never tell the truth. The Wishy-Washies alternate telling the truth and lying with their statements alternating true and false or false and true.

The world renowned explorer, the Sammy, landed on the island and questioned the natives, Tarun, Dipesh and Harish.

Explorer:

Tarun, to which tribe do you belong?

Tarun:

I'm a Greenie.

Explorer:

Dipesh, to which tribe do you belong?

Dipesh:

I'm a Fishmonger.

Explorer:

Was Tarun telling the truth?

Dipesh:

Yes.

Explorer:

Harish, to which tribe do you belong?

Harish:

I'm a Greenie.

Explorer:

To which tribe does Tarun belong?

Harish:

Tarun's a Wishy-Washie.

Which person is the Fishmonger?

- (a) Dipesh
- (b) Harish
- (c) Tarun
- (d) Cannot be determined

13. Four friends, Mr. Barber, Mr. Carpenter, Mr. Stockbroker and Mr. Tanner all have different occupations, barber, carpenter, stock broker and tanner. But none of them has an occupation which matches his name.

Each man always wears the same colour shirt, black, crimson, silver or topaz. But the colour shirt he wears does not start with the same letter as his name or his occupation.

Mr. Stockbroker and the tanner dine together regularly.

The Stockbroker wears a black shirt.

Mr. Carpenter is the barber.

What is the Stockbroker's occupation?

- (a) Barbar
- (b) Tanner
- (c) Carpenter
- (d) None of these

14. P, Q, R, S and T took a photography class together. The assignment was to photograph animals, so they decided to take a safari for 10 days. A different pair took the pictures each day. Some days they didn't see any animals. But they returned home with pictures of five animals, each taken on different days.

T was not involved with the picture of the anteater.

Q was one of the pair which took pictures of the emu.

No one was on the teams which took pictures of both the anteater and the deer.

One person captured the photo of both the crocodile and the emu.

One person took pictures of the bear. He also took photograph of an animal when he was out with S.

P and Q were successful on their day together as a team.

R and T, however, saw nothing on their day as a team.

Each man participated in the photographing of two animals.

Q, S and T together had a hand in photographing all five of the animals.

Which pair photographed the bear?

- (a) P and T
- (b) P and Q
- (c) R and S
- (d) Cannot be determined

15. Early one morning, four snails, A, B, C and D, set off together down the garden path. A and B kept the same steady pace, slithering only 8 metres by the time C and D had already reached the azalea.

C was wounded and had to stop for an hour to rest. Although D was tired, too, she pressed on,

but reduced her pace to be at the same speed as A's and B's.

C started off again just as A and B got even with her. She raced off at her original pace. A promptly sped up to the same speed as C and kept even with her. B just kept going at her original pace.

When A reached the end of the path, she was 1 metre ahead of B, but she was a half hour later than D was.

How many meters long was the path?

- (a) 10
- (b) 15
- (c) 8
- (d) None of these

16. Coach Pathak has one tennis scholarship left. He's just heard of a family with four boys who are all great tennis players. He's never seen them play, but his scouts assure him that all four play equally well. With no more knowledge available to him, he decides that he wants to give the scholarship to the tallest boy. But their parents do not want to show any favouritism.

The parents agree to have the boys exit the house, one at a time and let Coach Pathak pick the one he wants. He has to make an immediate decision on whether or not to offer the scholarship to that boy. If the coach uses his best strategy, what is the probability of him offering the scholarship to the tallest boy? Assume he can tell whether the boy is taller or shorter than the other boys he's seen.

- (a) 0
- (b) $1/3$
- (c) $11/24$
- (d) None of these

17. Fanny, Gopal and Harish play a challenge tennis tournament where two of them play a set, then the winner stays in the court to play the one who sat out.

During the tournament, Fanny played 15 sets, Gopal played 14 and Harish played 9.

Who played in set 13?

- (a) Fanny and Harish
- (b) Gopal and Harish
- (c) Fanny and Gopal
- (d) None of these

18. In the town of Rokas Phokas, all the married people lie all the time. All the single people tell the truth all the time.

Tennis is a popular pastime in Rokas Phokas. One day three women and three men decided to play. There were two couples and two single people among them.

If you asked Chandar whether Bandar is married to Tender, he would say, "Haan."

If you asked Pammi if she is married to Chandar, she would say, "Haan."

If you asked Jimmy if he is married to Rashmi, he would say, "Nahin."

If you knew enough about the local language to know whether "Haan" means "Yes" and "Nahin" means "No" or visa versa, you could figure out who is married to whom.

Can you figure it out who is married to Chandar?

(a) Tendar

(b) Rashmi

(c) Pammi

(d) None of these

19. A, B and C each make four statements about each other. But only one of them made four true statements.

A said:

1. B owes me \$10.
2. C owes me \$5.
3. All of C's statements are true.
4. All of B's statements are false.

B said:

1. I owe no money to A.
2. C owes me \$7.
3. I am Scandinavian.
4. All A's statements are false.

C said:

1. I owe no money to anyone.
2. B is Italian.
3. I always tell the truth.
4. Two of B's statements are true and two are false.

Find which statements are true and which are false for all three.

- (a) B—All statements true, A's and C's Statements are false.
- (b) B—All statements false, A—All statements true and C's Statements are false.
- (c) B—All statements true, A's and C's Statements are also true.
- (d) None of these

20. My next door neighbour lies a lot. In fact, he only tells the truth on one day a week! One day he told me, "I lie on Mondays and on Tuesdays."

The next day he said, "Today is either Thursday, Saturday or Sunday."

The next day he said, "I lie on Wednesdays and Fridays."

On which day of the week does my neighbour tell the truth?

- (a) Monday
- (b) Tuesday
- (c) Wednesday
- (d) None of these

21. In chess, a knight moves two squares in one direction and one square in another direction, ending up on the diagonally opposite corner of a 2×3 grid. Intervening squares can be occupied. Find the maximum number of knights which can be placed on an 8×8 chess board

so that so that no knight threatens another knight (can move into a square occupied by one of the other knights).

(a) 34

(b) 32

(c) 30

(d) None of these

22. Three brothers, Armani, Birianni and Chutanmi are all different ages. They each do strange things with numbers, that is, instead of saying the actual number, they change it in a certain way first.

One brother divides the number in half.

Another brother squares the number.

The third brother reverses the digits. (21 becomes 12, 50 and also 5 become 5)

When they were asked their ages, the oldest whispered his “age” to the thinnest, who whispered it to Chutanmi, who whispered it to the youngest, who answered: 27.

Then the youngest whispered his “age” to the tallest, who whispered it to Birianni, who whispered it to the shortest, who answered: 23

Lastly, the youngest whispered his “age” to the shortest, who whispered it to the thinnest, who whispered it to Armani, who answered: 16.

What are the ages of the three brothers?

(a) 12, 16 and 8

(b) 21, 8 and 16

(c) 5, 21 and 50

(d) 16, 21 and 50

23. Deepika was admiring the output of her new program to generate random numbers. She had printed out the first ten numbers of the results. She soon noticed something interesting. Each of the 10 numbers had exactly one digit, in the proper placement, of the 5 digit code she used to open her car door without a key.

In the first number 14073, for example, Deepika’s car code could not be 34170 (two digits correctly placed) or 92365 (none).

Find Deepika’s car entry code from these first 10 randomly generated numbers: 14073, 79588, 05892, 84771, 63136, 42936, 37145, 50811, 98174 and 29402?

(a) 05892

(b) 63136

(c) 42936

(d) None of these

24. A, B, C, D and E all live on Pine Street which has house numbers from 10 to 111, inclusive. Two of them live in the same house. The others all live in different houses. They all have made remarks about where they live, but not all the remarks are true.

A said, “My house number is a factor of B’s house number. E’s house number is 10 greater than D’.”

B said, “My house number is greater than 70. A’s house number is greater than 30.”

C said, “My house number is both a cube and a square. D’s house number is greater than 50.”

D said, "My house number is a square. B's house number is a cube."

E said, "My house number is twice B's"

But who's telling the truth? It turns out that all statements made by people living in houses with numbers greater than 50 were false. All the other statements were true.

Can you find out the house number of E?

- (a) 49
- (b) 16
- (c) 59
- (d) None of these

25. During a game of five card draw poker, played with a standard deck, you are dealt a hand with the following characteristics:

- It contains no aces or face cards.
- No two cards have the same value.
- All four suits are present.
- The total value of the odd cards equals the total value of the even cards.
- There are no three card straights.
- The total value of the black cards is 10.
- The total value of the hearts is 1(d)
- The card with the lowest value is a spade.

Exactly what are the five cards in your hand?

- (a) 2 of spades, 5 and 9 of diamonds, 4 of spades and 8 of clubs
- (b) 2 of diamonds, 5 and 9 of spades, 4 of hearts and 8 of clubs
- (c) 2 of clubs, 5 and 9 of hearts, 4 of diamonds and 8 of spades
- (d) None of these

26. Divayabh gave an application for a new passport to the clerk on Monday afternoon. Next day was a holiday. So the clerk cleared the papers on the next working day on resumption of duty. The senior clerk checked it on the same day but forwarded it to the head clerk on the next day. The head clerk decided to dispose the case on the subsequent day. On which of the following days was the case put up to the head clerk by the senior clerk?

- (a) Wednesday
- (b) Thursday
- (c) Friday
- (d) None of these

Directions for Questions 27 and 28 Read the following information and answer the questions given below.

- (i) Mark, a management representative (M. R.) from Mindworkzz Solutions Inc., has to meet 7 managers A, B, C, D, E, F and G on a particular day between 9 am and 4 pm.
- (ii) He takes 30 minutes with each manager and keeps a gap of 25 minutes between two appointments for travel and preparation except after the fifth visit, when he takes 50

minutes' break for lunch, travel and preparation.

- (iii) *He has to meet manager A immediately before E but immediately after F, who is the third manager to be met.*
- (iv) *'G' does not give time for M.R. before 9.30 am and after 10.30 am. 'D' and 'B' meet M.R. between 2 pm and (c)30 pm only.*

27. Who among the following is likely to be the first manager of that day?

- (a) G (b) C
(c) F (d) E

28. If manager 'F' asks him to visit again 25 minutes after his scheduled seventh visit is over, then at what time can he meet manager 'F'?

- (a) 3.55 pm (b) 3.40 pm
(c) 3.25 pm (d) None of these

Directions for Questions 29 and 30 Read the following information carefully and answer the Questions given below:

Sachin, Saurav, Rahul, Yuvraj, Mahendra and Suresh, six enemies of different heights and wearing different coloured jackets of red, blue, white, orange, yellow and green, are standing on either sides of a road with three on each side. Mahendra the tallest, is exactly opposite the person wearing red-coloured jacket. The shortest person is exactly opposite the person wearing green coloured jacket. Suresh is the person wearing orange-coloured jacket and is standing between Sachin and Yuvraj.

Rahul, who is wearing yellow-coloured jacket, is exactly opposite Sachin. Saurav who is wearing green-coloured jacket, is exactly opposite Suresh. Sachin, wearing the white-coloured jacket, is taller than Rahul but shorter than Yuvraj and Saurav.

29. What is the colour of the jacket of Yuvraj?

- (a) Red (b) Blue
(c) Red or blue (d) None of these

30. What is the position of Sachin from top when the persons are arranged in descending order of their heights?

- (a) Third (b) Second
(c) Fourth (d) None of these

Directions for Questions 31 and 32 Study the following information carefully and answer the questions given below:

Amar, Biswas, Calvin, Devendra, Ekta, Firoz and Gavli are seven persons who travel to office everyday by a local train which stops at five stations Kalyan, Thane, Kurla, Dadar and Mumbai Central respectively after it leaves base station.

- (a) *Three among them get in the train at the base station.*
(b) *Devendra gets down at the next station at which Firoz gets down.*

- (c) *Biswas does not get down either with Amar or Ekta.*
- (d) *Gavli alone gets in at station Dadar and gets down with Calvin after having passed one station.*
- (e) *Amar travels between only two stations and gets down at Mumbai central.*
- (f) *None of them gets in at Kurla.*
- (g) *Calvin gets in with Firoz but does not get in with either Biswas or Devendra.*
- (h) *Ekta gets in with two others and gets down alone after Devendra.*
- (i) *Gavli and Devendra work in the same office and they get down together at Dadar.*
- (j) *None of them gets down at Kalyan.*

31. At which station does E get down?

- (a) Thane
- (b) Kurla
- (c) Dadar
- (d) None of these

32. After how many stations does Ekta get down?

- (a) One
- (b) Two
- (c) Three
- (d) Four

Directions for Questions 33 and 34 Study the following information carefully and answer the questions given below it:

Yudhishter passes through seven lanes to reach his School. He finds that 'Truth Lane' is between his house and 'Lie Lane'. The third lane from his school is 'Karma Lane'. 'Dharma Lane' is immediately before the 'Yog Lane'. He passes 'Salvation Lane' at the end, 'Lie Lane' is between 'Truth Lane' and "Dharma Lane', the sixth lane from his house is 'Devotion Lane'.

33. How many lanes are there between 'Lie Lane' and 'Devotion Lane'?

- (a) One
- (b) Two
- (c) Three
- (d) Four

34. If the house of Yudhishter, each lane and his school are equidistant and he takes two minutes to pass one lane, then how long will he take to reach school from his house?

- (a) 18 minutes
- (b) 16 minutes
- (c) 14 minutes
- (d) None of these

35. A man would like to take a new health insurance. An officer taking care of these matters says to the man: "Please tell me how many children you have." The man answers: "I have three of them." The officer: "What are the ages of your children?" The man answers: "The product of the ages is equal to 36." The officer replies: "This is not enough information Sir!"; the man replied "Sorry that I was a little bit unclear, but the sum of the ages is equal to the number of shops in front of your office," says the man. The officer: "This still isn't enough information Sir!"; The man replies: "My oldest child loves chocolate." The officer: "Thanks for your cooperation, Now I know the ages."

Are you as smart as the officer? Then give the ages of the children.

(a) 13

(b) 21

(c) 16

(d) 38

Answer Key

1. (c)	2. (b)	3. (c)	4. (a)
5. (c)	6. (a)	7. (a)	8. (a)
9. (c)	10. (b)	11. (b)	12. (b)
13. (c)	14. (a)	15. (b)	16. (c)
17. (c)	18. (d)	19. (b)	20. (b)
21. (d)	22. (b)	23. (d)	24. (c)
25. (d)	26. (b)	27. (b)	28. (c)
29. (a)	30. (c)	31. (b)	32. (c)
33. (d)	34. (c)	35. (c)	

Solutions

Solutions for 1 to 5:

Solve using constraints and checking the options for each constraint:

Constraint 1: The constraints are U and X not together

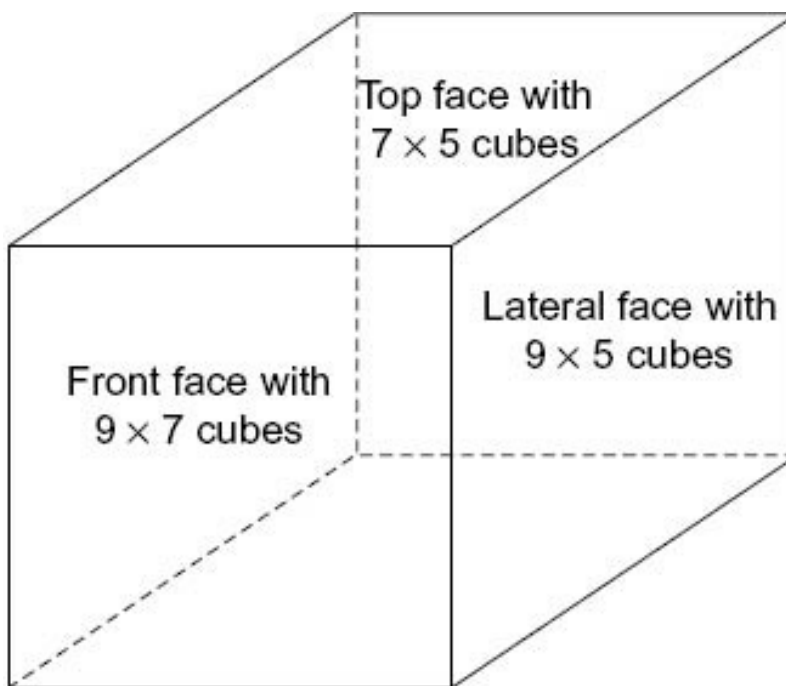
Constraint 2: A and C not together.

Constraint 3: C not with V

1. ABUXY contradicts constraint 1. Hence, this team is not possible. Thus Option c is correct
ABC UVWXY
2. C AND W are compulsory. Hence, of the senior faculties we need to take B. The teams possible then are: BC-WUY and BC-WXY. Hence, only 2 teams are possible. Option (b) is correct.
3. Constraint 3 clearly defines that V cannot go with C. Hence, Option (c) is correct.
4. B must compulsorily go to the new office as we can select only one out of A and C. Hence, Option (a) is correct.
5. Both i and iii are true. Hence, Option (c) is correct.

Solutions for 6 to 10:

The six surfaces can be visualized as three surfaces of $9 \ncong 7$, $9 \ncong 5$ and $7 \ncong 5$ (rows and columns) as shown in the figures below:



The individual surfaces would look as below:

9 rows ¥ 7 columns (two surfaces)

Painted on all three surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on all three surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on all three surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on all three surfaces

9 rows ¥ 5 columns (two surfaces)

Painted on all 3 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on all 3 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces

Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on all 3 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on all 3 surfaces

AND 7 rows ¥ 5 columns (two surfaces)

Painted on all 3 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on all 3 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on 2 surfaces	Painted on 1 surface	Painted on 1 surface	Painted on 1 surface	Painted on 2 surfaces
Painted on all 3 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on 2 surfaces	Painted on all 3 surfaces

The answers to the questions can be visualized based on the above visualizations:

- In all these kinds of questions, the number of cubes which would be painted on three sides would always be the corner cubes. There would be 8 corner cubes. Option (a) is correct.
- The two faces colored cubes would be the cubes along each edge (except for the corner cubes). It can be visualized that the top edges of the cube would have $7 + 7 + 3 + 3 = 20$ cubes and the bottom edges would also have the same number (i.e. 20 cubes).

The vertical edges would have a further $7 + 7 + 7 + 7 = 28$ cubes.

Out of the total of 68 cubes which are on the edges, 8 cubes would be corner cubes. Hence, the number of cubes painted on two sides would be $68 - 8 = 60$. Option (a) is correct.

- The number of one face colored cubes would be:

On the front and back surfaces: $7 ¥ 5 + 7 ¥ 5 = 70$ cubes. (you can remember this as $(m-2) ¥ (n-2)$ where m and n are the number of rows and columns on the surface in question)

On the top and bottom surfaces: $5 ¥ 3 + 5 ¥ 3 = 30$ cubes.

On the lateral surfaces: $7 ¥ 3 + 7 ¥ 3 = 42$ cubes.

Thus a total of 142 cubes would have one side painted. Option (a) is correct.

- The number of cubes with no face colored would be given by $7 ¥ 5 ¥ 3 = 105$ [which can again be remembered as $(m-2)(n-2)(p-2)$ where m, n and p are the number of parts in which the cube surfaces have been cut – in this case $m=9$, $n=7$ and $p=5$].

Alternately, you could also have solved this using: All cubes – cubes with 3 sides colored – cubes with 2 sides colored – cubes with 1 side colored = $315 - 8 - 60 - 142 = 105$.

Option (c) is correct.

10. The cubes along the vertical edges would be painted both red and green. There are 7 such cubes (with 2 faces colored) on each of the 4 edges of the cuboid. Thus, the total number of cubes which would be painted on two sides (in red and green) would be $7 \times 4 = 28$. Option (b) is correct.

11. The statements can be mapped as follows:

Number 1: Black Hair Long tail

Number 2: Short tail wore a collar

Number 3: White Hair No Collar

Scenario 1: If statement 2 of Shopkeeper 1 is correct & his statement 1 is false: Statement 1 of shopkeeper would be false. Then his (shopkeeper 2's) statement 2 would be correct and shopkeeper 3's statement 2 would be false. This would mean shopkeeper 3's first statement would be true.

It can be concluded that: The dog has white hair, he wears a collar and has a long tail.

Scenario 2: If statement 1 of Shopkeeper 1 is correct & his statement 2 is false: Statement 1 of shopkeeper would be true. Then his (shopkeeper 2's) statement 2 would be false while his statement 1 would be true. Shopkeeper 3's statement 2 would be true. This would mean shopkeeper 3's first statement would be false.

It can be concluded that: The dog has black hair, wears no collar and has a short tail.

Option (b) is a possible description of the dog

12. Looking at the statements after the initial condition, it can be easily seen that Dipesh is lying when he says that he is a fishmonger- as nobody can say that he/she is a fishmonger truthfully. Also, Dipesh would not be a fishmonger—and he cannot be a Greenie. Hence, Dipesh would be a Wishy Washy, thus making his second statement true. This means that Tarun is a greenie. This in turn means that Harish's second statement about Tarun is false. This also means that Harish cannot be a greenie which renders his first statement also false. Thus, Harish must be a Fish monger.

Option (b) is correct.

13. In this question, the following would be the starting grid:

	Profession (Barber, Carpenter, Stockbroker, Tanner)	Shirt colour (Black, Crimson, Salmon, Topaz)
Mr. Barber		
Mr. Carpenter		
Mr. Stockbroker		
Mr. Tanner		

After using the clues, we get: The clues are used in the following manner to reveal the

stockbroker's profession:

Since Mr. Carpenter is the barber and the stockbroker is friends with the tanner – the stockbroker must be neither the baker nor the tanner. Also, since we know that no person has a profession which equals his name. Hence, Mr. Stockbroker must be the Carpenter:

	Profession (Barber, Carpenter, Stockbroker, Tanner)	Shirt colour (Black, Crimson, Salmon, Topaz)
Mr. Barber	Tanner	
Mr. Carpenter	Baker	
Mr. Stockbroker	Carpenter	Black
Mr. Tanner	Stockbroker	

Option (c) is correct.

14. The pairs who were successful getting pictures were:

P and Q photographed the anteater.

P and T photographed the bear.

R and S photographed the crocodile.

S and T photographed the deer.

Q and R photographed the emu.

There are 10 possible pairs. Each person went out four times, each time with a different partner. Each person got a photograph twice and got nothing twice.

First, to determine which pairs photographed an animal and which didn't, make a 5x5 matrix with row and column headings of P, Q, R, S and T. Since we don't always know what animal was photographed, assign the animals a number, 1 through 5.

Everybody took photographs of two animals. So you can assign animal 2 to P [(P, RST) = 2] and you can assign animal 3 to Q [(Q, RST) = 3] in the matrix.

Then you are left with assigning animal 4 to S and animal 5 to T [(R, S) = 4 and (S, T) = 5.]

Since S has both animals 4 and 5, S cannot have animals 2 and (3) That means that we can assign 2 to R and 3 to T.

The pairs who were successful were—(P, Q), (P, T), (Q, R), (R, S) and (S, T).

Next, we need to determine which pair photographed which animal. We know that

- The Emu is animal 1 or (3)
- The Anteater is not 2 and 5.
- The Bear is not 4 and 5. Therefore, the bear is 2 or (3).

Consider these cases separately: (Emu, Bear) = (1, 2), (1, 3) and (3, 2). The first two cases lead to contradictions. Therefore, (Emu, Bear) = (3, 2) which leads to Crocodile = (4)

Then, since T did not photograph the Anteater, the Anteater cannot be 2 or 5. So the Anteater must be (1)

Then the Deer is 5.

15. The garden path is 15 metre long.

In the second part of the journey, once they passed the azalea, A and C beat B by 1 metre. They are a half hour behind D, but remember that C rested for an hour. C would have beaten D by half an hour if she had not rested.

Therefore, the slower speed is 1 metre in .5 hour, or 2 m/hr.

That makes the first part of the journey $8 + 2 = 10$ metre. The second part must be half as long, or 5 metre.

16. The best strategy is to not pick the first boy, then choose the next boy who is taller than the first. The probability is then $11/24$ that he will pick the tallest boy.

Let's call the boys: A, B, C and D, tallest to shortest.

If any of them are the first to leave the house, then the probability of picking the tallest boy is 0, 1, $1/2$ or $1/3$, respectively.

That results in a combined probability of $P = (0 + 1 + 1/2 + 1/3) / 4 = 11/24$.

17. Fanny and Gopal played in the 13th set.

The total number of sets played = $(15 + 14 + 9) / 2 = 19$.

Harish played 9 sets and must have sat out 10 sets. Since no one sat out two sets in a row, he must have played and lost in all the even numbered sets and sat out all the odd numbered sets.

18. Jimmy is married to Tender. B is married to Rashmi.

First, assume "Haan" means "Yes" and "Nahin" means "No." Then Chander said that Bander is married to Tender. Pammi said that she is married to Chander. And Jimmy said that he is not married to Rashmi.

Pammi, then, can't be single and must be married to Jimmy or Bander. But if Pammi is married to Jimmy, Jimmy couldn't have said what he did. And if Pammi is married to Bander, then Chander lied and he is married and Jimmy is single. But you still wouldn't know if Tender or Rashmi is single.

So assume that "Haan" means "No" and "Nahin" means "Yes." Then Chander said that Bander is not married to Tender. Pammi said that she is not married to Chander. And Jimmy said that he is married to Rashmi.

Jimmy must be single. Pammi is either married to Chander or she is single. Chander is either single and Bander is not married to Tender OR Chander is married and Bander is married to Tender.

It isn't possible for Chander to be married. If Chander is single, then Pammi is single. Jimmy is married to Tender and Bander is married to Rashmi.

19. All of B's statements are true. All of A's and C's statements are false.

If all of A's statements were true, they would lead to contradictions. His second statement would conflict with his third and with C's first statement.

If all of C's statements were true, they would also lead to contradictions. If they were all true, B's second, third and fourth statements would be false, which contradicts C's fourth statement.

If you assume all of B's statements are true, there are no contradictions. If they are all true, you can determine that all of A's and C's statements are false.

20. My neighbour tells the truth on Tuesdays.

Take them one at a time and assume he is telling the truth on each of the three days that he makes a statement. Then assume he is not telling the truth on any of the days that he makes a statement.

The only case that works is the one where he is telling the truth on the third day. On that third day, from the statements he made, he lies on Wednesdays and Fridays. He tells the truth on Mondays and Tuesdays. Yesterday was not Thursday, Saturday or Sunday. That means that he couldn't be telling the truth Monday because yesterday can't be Sunday and therefore, he must tell the truth on Tuesdays.

21. The maximum number of knights is 32

22. Armani is 21 He is the tallest and squares numbers.

Birianni is 8. He is the thinnest and reverses numbers.

Chutanmi is 16. He is the shortest and divides numbers in half.

23. Deepika's car entry code is 39876.

Concentrate on the digits which have multiple potential matches per position because there are 10 numbers listed, but the access code is only 5 digits long. That means 5 of the random numbers in the list must be duplicates or triplicates so they can be ignored.

The first digit in random number list does not have any duplicates... It must be left to the end to solve.

The second digit has 4's and 9's duplicated.

The third digit has 1's triplicated and 8's duplicated.

The forth digit has 3's duplicated and 7's triplicated.

The last digit has 1's and 6's duplicated.

Because the first digit has no duplicates, one or more triplicates must be used.

Because the 9th random number, 98174 uses both triplicates digits, we know that the answer cannot contain xx17x, but must be either xx13x or xx87x because we know that the other digit positions must all be duplicates. In other words, the solution will contain 1 unduplicated row (the first row), 3 duplicated rows, and 1 triplicated row.

The 5th random row, 63136 contains both the 1 and 3, leaving us with xx87x as the only possible solution.

By keeping track of which rows have been used, and which columns contain duplicates that must be used, the two duplicates are quickly found: x9876.

This leaves the 7th row which has not been used, which results in the final answer: **39876**.

- 24.

A	16
B	64
C and E	59

D	49

25. Your poker hand consists of

- 2 of spades
- 5 and 9 of hearts
- 4 of diamonds
- 8 of clubs

Since all suits are present, there must be at least two red cards and two black cards. And there is only one suit with two cards.

Since the hearts total 14 and there are no aces or face cards and all cards have a different value, the heart combination can only be (4, 10), (5, 9) or (6, 8).

The sum of the odd cards equals the sum of the even cards, therefore, there must be two odd and three even cards. The maximum of the odd cards is $7 + 9 = 16$. The minimum of the even cards is $2 + 4 + 6 = 12$. Therefore, the sums must be 12, 14, or 16.

The only combination of cards that meets all these criteria is the one shown above.

26. During the first reading of the questions one needs to react to the chain of events taking place in the questions:

Divayabh submitted the application form on Monday. Tuesday was a holiday. Clearance from clerk on Wednesday and consecutive clearance from senior clerk on Wednesday itself. Finally the application reached to the head clerk on Thursday.

Hence option (b) is the correct answer.

27. The questions are approached by tabulating all the indirect and direct clues in the following table:

Order	Manager	Duration of Meeting	Gap taken by Mark
1	C	9:00 AM TO 9:30 AM	25
2	G	9:55 AM TO 10:25 AM	25
3	F	10:50 AM TO 11:20 AM	25
4	A	11:45 AM TO 12:15 PM	25
5	E	12:40 PM TO 1:10 PM	50
6	D/B	2:00 PM TO 2:30 PM	25
7	B/D	2:55 PM TO 3:25 PM	-

Now we can answer the questions:

Hence option (b) is the correct answer.

28. The time will be 3:50 pm. Hence option (d) is the correct answer.

29–30.

In these questions there are two types of clues given, since there are multiple objects in the

questions which are to be arranged in a particular fashion. First are the primary clues and then are the secondary clues.

To solve the questions first use all the primary clues to create a clear structure of the situation in the following manner:

Let heights be H1 to H6. Where H1 being the tallest and H6 being the shortest.

Since Suresh is wearing orange coloured jacket, he is standing between Sachin and Yuvraj, positions of all the three can be [Sachin, Suresh, Yuvraj] or [Yuvraj, Suresh, Sachin]. Now since Rahul is wearing yellow-coloured jacket and is exactly opposite Sachin and Saurav, the person wearing the green coloured jacket is exactly opposite Suresh, the positions of the persons may be given as:

Possibility 1

Rahul (Yellow)	Saurav (Green)	Mahendra (Blue)
ROAD		
Sachin (White)	Suresh (Orange)	Yuvraj (Red)

Possibility 2

Mahendra (Blue)	Saurav (Green)	Rahul (Yellow)
ROAD		
Yuvraj (Red)	Suresh (Orange)	Sachin (White)

It is evident that Mahendra is opposite to Yuvraj. Now since Mahendra is opposite to the person wearing red-coloured jacket, it is given that Sachin is wearing white coloured jacket hence, by elimination Mahendra is the person wearing blue-coloured jacket.

Now delving into the heights of the six enemies, the height of Mahendra is H(1). The shortest person is Suresh because he is opposite to the person wearing green jacket. Hence Suresh is the shortest i.e. H6.

Since Sachin is taller than Rahul but shorter than Yuvraj and Saurav this means that Rahul and Sachin are H5 and H(4). But heights of Saurav and Yuvraj are still unknown.

Now we can tabulate all the information into a table:

Person	Colour	Height
Sachin	White	H4
Saurav	Green	H2/H3
Rahul	Yellow	H5
Yuvraj	Red	H3/H2
Mahendra	Blue	H1
Suresh	Orange	H6

29. Hence option (a) is the correct answer.

30. Hence option (c) is the correct answer.

31–32. The clues in the questions that can be decoded directly for tabulation will lead to the

following table:

Table 1 for Questions 31-32

Station	Get In	Get Down
Base Station	????	XXX
Kalyan	????	XXX
Thane	XXX	????
Kurla	Only Gavli	Biswas and Devendra
Dadar	Amar	Only Ekta
Mumbai Central	XXX	Amar, Gavli an Calvin

Now from second clue Firoz gets down at Thane and he got in either at the base station or at Kalyan. Now since Firoz got down at Thane and he had got in with Calvin then it means that both Calvin and Firoz got in either at base station or at Kalyan. Since Biswas and Devendra got down at station Kurla then they too have got in either at the Base station or at Kalyan. It is given that Ekta got in with two other persons i.e. in a group of three persons. So, Ekta must have got in at the Base station.

Now we can tabulate the conclusions as:

Table 2 for Questions 31 and 32

Station	Get In	Get Down
Base Station	Ekta and (Calvin, Firoz) or (Biswas , Devendra)	XXX
Kalyan	(Calvin, Firoz) or (Biswas , Devendra)	XXX
Thane	XXX	Only Firoz
Kurla	Only Gavli	Biswas and Devendra
Dadar	Amar	Only Ekta
Mumbai Central	XXX	Amar, Gavli and Calvin

Now we can answer the questions.

31. Hence option (c) is the correct answer.

32. Hence option (d) is the correct answer.

33–35. From the sequence of statements, we can decode the clues to reach the following table:

Table for Questions 33 and 34

House	Truth	Lie	Dharma	Yog	Karma	Devotion	Salvation	School

Now we answer the Questions.

33. Hence option (c) is the correct answer.

34. Hence option (c) is the correct answer.

35. The factors of 18 being 36, 18, 12, 9, 6, 4, 3, 2 and 1 we can clearly visualize that the possible products for the three numbers to get a multiple of 36 are:

18, 2, 1(sum of ages = 21); 12, 3, 1(sum of ages = 16); 6, 3, 2(sum of ages = 11); 4, 3, 3(sum of ages = 10); 9, 4, 1(sum of ages = 14); 9, 2, 2(sum of ages = 13); 36, 1, 1(sum of ages = 38); 6, 6, 1(sum of ages = 13).

We further know that the sum of the ages is not enough information to identify the ages. This can only mean that the sum of the ages must be 13 – since that is the only sum of ages that still leaves confusion, once the sum of the ages is known (the confusion only gets resolved when it is known that there is an oldest child.

Level of Difficulty (LOD)—III

Directions for Questions 1 to 5 Two of Sachin, Laxman and Rahul made centuries while playing a test match against Pakistan at Mohali, Chandigarh. The shorter of Sachin and Laxman is the older of the two century hitters. The younger of Laxman and Rahul is the shorter of the two century hitters. The taller of Sachin and Rahul is the younger of the two century hitters.

1. Who is older between the two century makers?
(a) Sachin (b) Laxman
(c) Rahul (d) Cannot be determined
2. Who is younger between the two century hitters?
(a) Sachin (b) Laxman
(c) Rahul (d) Cannot be determined
3. Who is taller between the two century makers?
(a) Sachin (b) Laxman
(c) Rahul (d) Cannot be determined
4. Who is shorter between the two century makers?
(a) Sachin (b) Laxman
(c) Rahul (d) Cannot be determined
5. Who among the three did not hit a century?
(a) Sachin (b) Laxman
(c) Rahul (d) Cannot be determined

Directions for Questions 6 to 8 Steffi, her brother, her daughter, and her son are tennis players. One day while playing tennis at home, a visitor noticed some facts.

- (i) Steffi's brother was directly across the net from her daughter.

- (ii) *Her son is diagonally across the net from the worst player's sibling.*
(iii) *The best player and the worst player are on the same side of the net.*

6. Who is the worst player?

- (a) Steffi (b) Daughter
(c) Son (d) Data inadequate

7. Who is the best player?

- (a) Brother (b) Daughter
(c) Son (d) Steffi

8. Which of the following pair is on either of the sides?

- (a) Steffi & her brother (b) Brother & son
(c) Daughter & Steffi (d) Data inadequate

Directions for Questions 9 to 11 Abdul, Balwinder, and Charu go for dinner to Domino's, a famous restaurant at C.R. Park. Each orders either Paneer Tikka or Roasted Chicken.

- (i) *If Abdul orders Paneer Tikka, then Balwinder orders what Charu had ordered.*
(ii) *If Balwinder orders Paneer Tikka, then Abdul orders the dish that Charu doesn't order.*
(iii) *If Charu orders Roasted Chicken, then Abdul orders the dish that Balwinder ordered.*

9. Who among the three always orders the same dish?

- (a) Abdul (b) Balwinder
(c) Charu (d) Data inadequate

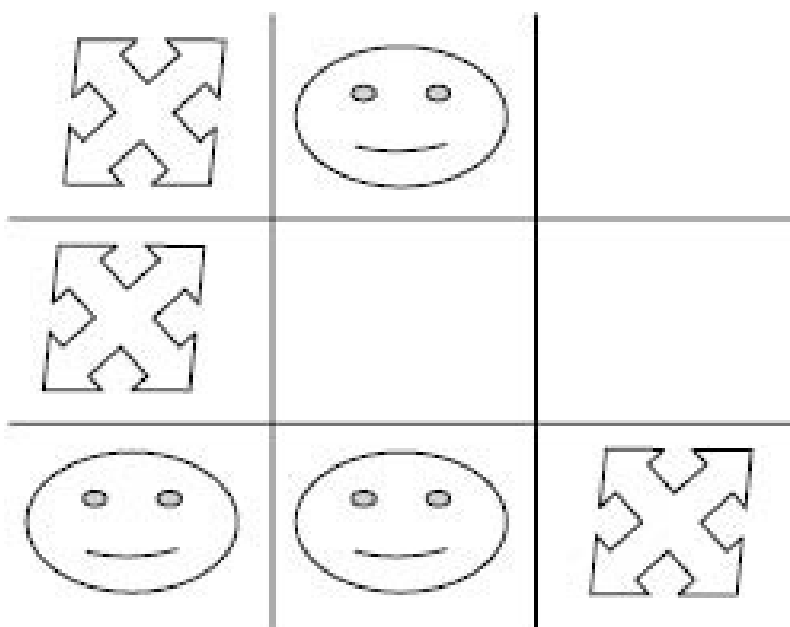
10. If Charu ordered Roasted chicken, what is the dish ordered by Balwinder?

- (a) Roasted Chicken (b) Paneer Tikka
(c) Data Inadequate (d) None

11. If on Tuesday, Balwinder, a devotee of Lord Hanuman eats only vegetarian food, what will Charu eat on Tuesday?

- (a) Paneer Tikka (b) Roasted Chicken
(c) None (d) Data inadequate

Directions for Questions 12 to 13 (Logical Reasoning) A game of Kattam-Kat is played between two players as shown below:



Each player in his/ her turn put his mark  or .

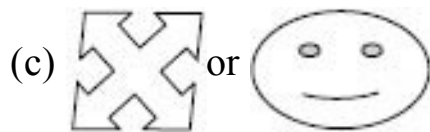
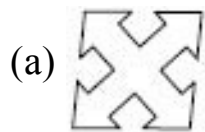
 A player who first gets three or  in a horizontal, vertical or diagonal line wins.

 A player will always place his/her mark in a line that already contains (a) two of his/her own marks or (d) two of his.

Her opponent's marks—giving priority to (a) over (b).

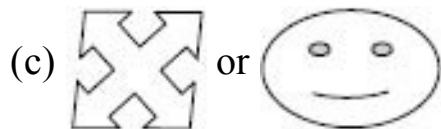
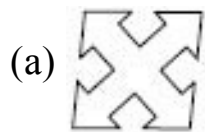
Only the last mark to be placed in the game shown is not given.

12. The player who started the game uses:



(d) Data inadequate

13. The player who won the game uses



(d) Data inadequate

Directions for Questions 14 to 19 Five different film actors namely Amit, Shahrukh, Anil, Sunil, and Akshay are engaged in the shooting of five different movies with five different actresses Madhuri, Kareena, Aishwarya, Shilpa, and Juhi not necessarily in the same order, in different studios.

The director of each film decided to set a record by making the films as early as possible.

- (i) Aishwarya's studio is between Amit's and Akshay's studios.*
- (ii) Shahrukh's director who doesn't have Aishwarya as an actress in the shooting took three fourths as many as the number of days taken by Sunil's director.*
- (iii) Akshay's studio number is 417.*
- (iv) Anil's film took more days than Amit's, while Amit's film took more days than Aishwarya's to get finalised.*
- (v) The director from studio number 418 took 16 days lesser than the director from studio number 415, to complete his film.*
- (vi) Shilpa's film took 8 days more than Amit's and two days more than Juhi's .*
- (vii) Madhuri's studio number is 416*
- (viii) Madhuri's film took 8 day less than Aishwarya's film and Anil's films took maximum number of days for completion.*

14. Who is the opposite of Kareena in her film?

- (a) Amit
- (b) Shahrukh
- (c) Akshay
- (d) Sunil

15. Which of the following pairs is correct for the film in studio number 418?

- (a) Akshay and Shilpa
- (b) Anil and Aishwarya
- (c) Shahrukh and Aishwarya
- (d) None of these

16. The director of which studio made the film in the least number of days?

- (a) Studio No. 415
- (b) Studio No. 416
- (c) Studio No. 417
- (d) Studio No. 418

17. Name the actress of studio No. 417.

- (a) Kareena
- (b) Aishwarya
- (c) Juhi
- (d) None

18. Sunil's film was completed in:

- (a) 44 days
- (b) 40 days
- (c) 32 days
- (d) None

19. Anil's opposite was:

- (a) Juhi
- (b) Shilpa
- (c) Aishwarya
- (d) Madhuri

Directions for Questions 20 to 25 Six cricketers from six different nations stay in a five star hotel in

different rooms. Each of them eats a different variety of food in a meal and hits different number of sixes in an average match. Now read the given clues carefully.

- (i) *The player in room No. 142 eats twice as much as the number of varieties eaten by the player, who hits an average of 8 sixes per match, in a meal.*
- (ii) *The player from New Zealand and the player in room No. 146 eat a combined 40 varieties in a meal.*
- (iii) *The player from India eats 8 varieties less than the player from England but hits 10 more sixes in an average match.*
- (iv) *Four times the number of varieties in a meal eaten by the player in room No. 144 is lesser than the number of sixes hit by him in an average match.*
- (v) *The player in room No.143 eats 12 varieties per meal and hits 8 sixes on an average in each match.*
- (vi) *The player who eats 16 varieties per meal hits 24 sixes per match on an average.*
- (vii) *The player in room No. 145 eats 8 varieties per meal and hits 2 sixes less than the player from Pakistan on an average in a match.*
- (viii) *The Australian player is staying two rooms after the English who is staying two rooms after the Pakistani player.*

Now answer Questions 20–25 based on the above clues.

- 20. In which room is the Australian player staying?
 - (a) Room No. 142
 - (b) Room No. 143
 - (c) Room No. 144
 - (d) Room No. 145
- 21. What is the average number of sixes hit by the Indian player?
 - (a) 8
 - (b) 16
 - (c) 18
 - (d) 24
- 22. How many varieties of food is eaten by the English player in his meal?
 - (a) 8
 - (b) 12
 - (c) 16
 - (d) 20
- 23. The player of which country is staying in room No. 146?
 - (a) India
 - (b) Pakistan
 - (c) Sri Lanka
 - (d) England
- 24. The player of which country hits 24 sixes on an average?
 - (a) India
 - (b) New Zealand
 - (c) Pakistan
 - (d) Sri Lanka
- 25. The player of which country eats the highest number of varieties of food in a meal?
 - (a) India
 - (b) New Zealand
 - (c) England
 - (d) Sri Lanka

Directions for Questions 26 to 31

Four bottles P, Q, R, and S are arranged side by side. Each contains a fixed amount of soft drink measured in litres. The different soft drinks are Pepsi, Coke, Limca, and Sprite.

Read the following clues carefully:

- (i) Pepsi is between Sprite and Coke.
- (ii) The amount of Sprite is more than the amount of Pepsi, but lesser than that of Coke.
- (iii) Limca is not in bottle R.
- (iv) The bottle containing 2.2 ltr. of soft drink doesn't have Limca.
- (v) Bottle R contains more amount than bottle P.
- (vi) The difference between the amount contained by Limca and Sprite is 0.6 litres.
- (vii) The bottle with Coke is between the bottles containing 0.6 ltr. and 1 l.
- (viii) Bottle S doesn't contain Coke and doesn't have the least amount of soft drink in it.

Now answer Questions 26 – 31 based on the above clues:

- 26. What is the amount of soft drink in bottle Q?
 - (a) 0.6 ltr.
 - (b) 1 ltr.
 - (c) 1.6 ltr.
 - (d) 2.2 ltr.
- 27. Which bottle contains 1.6 ltr. of soft drink?
 - (a) P
 - (b) Q
 - (c) R
 - (d) S
- 28. Bottle R contains:
 - (a) Pepsi
 - (b) Coke
 - (c) Limca
 - (d) Sprite
- 29. What is the amount of Limca in the bottle?
 - (a) 0.6 ltr.
 - (b) 1.6 ltr.
 - (c) 1 ltr.
 - (d) 2.2 ltr.
- 30. Which bottle contains the highest amount of soft drink?
 - (a) P
 - (b) Q
 - (c) R
 - (d) S
- 31. The amount of Sprite contained by the bottle is:
 - (a) 0.6 ltr.
 - (b) 1 ltr.
 - (c) 1.6 ltr.
 - (d) 2.2 ltr.

Directions for Questions 32 to 35 A quiz has three rounds of two questions each. In the first round, each correct answer carries 20 points; each incorrect answer carries a penalty of 10 points. If both the questions are answered correctly, a bonus of 10 points is awarded. In the second round, each

correct and incorrect answer carries the same number of points as in the first round. However, an additional penalty of 10 points is awarded if both the questions were answered incorrectly. In the final round, each correct answer carries 40 points and an incorrect one carries a penalty of 20 points.

32. In how many ways can a score of 40 be achieved in the quiz?
- (a) 4 (b) 1
(c) 3 (d) 2
33. What is the probability of scoring 100 in the quiz?
- (a) $2/9$ (b) $2/27$
(c) $4/27$ (d) $1/9$
34. If only two answers were correct, what is the probability that the score would be 20?
- (a) $1/3$ (b) $1/6$
(c) $2/3$ (d) 0
35. If two answers are incorrect, the minimum possible score is:
- (a) 50 (b) 60
(c) 70 (d) 80

Directions for Questions 36 to 40 Refer to the caselet below:

Mr Ahluwalia, Mr Bhatia, Mr Chopra, Mr Dayal, and Mr. Eeshwar have first and middle names as per the following conditions: (Each of them has different first and middle names).

- (i) *Four of them have a first or middle name of Ram, three of them have first or middle name of Shyam, two of them have a first or middle name of Tram and one of them has a first or middle name of Alam.*
- (ii) *Either Mr Ahluwalia and Mr Bhatia are both named Tram or Mr Chopra and Mr Dayal are both named Tram.*
- (iii) *Of Mr Bhatia and Mr Chopra either both are named Shyam or neither is named Shyam.*
- (iv) *Mr Dayal and Mr Eeshwar are both not named Ram.*

36. Which of these is a possible combination of names?

- (a) Tram Ram Ahluwalia
(b) Alam Ram Chopra
(c) Ram Shyam Chopra
(d) None of these

37. The two Trams are:

- (a) Mr Ahluwalia and Mr Bhatia
(b) Mr Chopra and Mr Dayal
(c) Mr Dayal and Mr Ahluwalia

- (d) Mr Bhatia and Mr Dayal
38. Who is named Alam?
- (a) Mr Ahluwalia (b) Mr Bhatia
(c) Mr Chopra (d) Mr Dayal
39. Mr Eeshwar is known as:
- (a) Ram Shyam (b) Tram Ram
(c) Shyam Alam (d) Tram Shyam
40. Which of these people have the same name?
- (a) Mr Bhatia and Mr Chopra
(b) Mr Chopra and Mr Dayal
(c) Mr Ahluwalia and Mr Eeshwar
(d) There is no such pair

Directions for Questions 41 to 45 Sixteen teams have been invited to participate in the ABC Gold Cup cricket tournament. The tournament is conducted in two stages. In the first stage, the teams are divided into two groups. Each group consists of eight teams, with each team playing every other team in its group exactly once. At the end of the first stage, the top four teams from each group advance to the second stage while the rest are eliminated. The second stage comprises several rounds. Each round involves one match for each team. The winner of a match in a round advances to the next round, while the loser is eliminated. The team that remains undefeated in the second stage is declared the winner and claims the Gold Cup.

The tournament rules are such that each match results in a winner and a loser with no possibility of a tie. In the first stage, a team earns one point for each win and no points for a loss. At the end of the first stage, teams in each group are ranked on the basis of total points to determine the qualifiers advancing to the next stage. Ties are resolved by a series of complex tie-breaking rules so that exactly four teams from each group advance to the next stage.

41. What is the total number of matches played in the tournament?
- (a) 28 (b) 55
(c) 63 (d) 35
42. The minimum number of wins needed for a team in the first stage to guarantee its advancement to the next stage is:
- (a) 5 (b) 6
(c) 7 (d) 4
43. What is the highest number of wins for a team in the first stage in spite of which it would be eliminated at the end of first stage?
- (a) 1 (b) 2
(c) 3 (d) 4

44. What is the number of rounds in the second stage of the tournament?
- (a) 1 (b) 2
(c) 3 (d) 4
45. Which of the following statements is true?
- (a) The winner will have more wins than any other team in the tournament.
(b) At the end of the first stage, no team eliminated from the tournament will have more wins than any of the teams qualifying for the second stage.
(c) It is possible that the winner will have the same number of wins in the entire tournament as a team eliminated at the end of the first stage.
(d) The number of teams with exactly one win in the second stage of the tournament is 4.

Answer Key

1. (b)	2. (a)	3. (a)	4. (b)
5. (c)	6. (d)	7. (a)	8. (d)
9. (a)	10. (a)	11. (a)	12. (b)
13. (b)	14. (a)		
15. (d) [Sunil & Aishwarya]		16. (b)	17. (c)
18. (c)	19. (b)	20. (d)	21. (c)
22. (b)	23. (c)	24. (d)	25. (b)
26. (a)	27. (a)	28. (b)	29. (c)
30. (c)	31. (c)	32. (d)	33. (b)
34. (d)	35. (b)	36. (d)	37. (b)
38. (b)	39. (a)	40. (c)	41. (c)
42. (b)	43. (a)	44. (c)	45. (c)

Solutions

Solutions 1 to 5

In this question there are essentially three clues.

When we use the first clue (The shorter of Sachin and Laxman is the older of the two century hitters) we get two main possibilities depending on who is shorter between Sachin and Laxman. We get the following options:

Possibility 1		Possibility 2

L		S
S	Older century Hitter	L

If we introduce Rahul on the basis of his height into the above figure, we would get six possible arrangements on the basis of height.

Possibility 1	Possibility 2	Possibility 3	Possibility 4	Possibility 5	Possibility 6	
		R			R	
L	L	L	S	S	S	
	R			R		
S	S	S	L	L	L	Older Century Hitter
R			R			

At this point if we use the third clue (viz: Taller of Sachin and Rahul is the younger century hitter) the table above would modify to:

Possibility 1	Possibility 2	Possibility 3	Possibility 4	Possibility 5	Possibility 6	
		R ^Y			R ^Y	
L	L	L	S ^Y	S ^Y	S	
	R ^Y			R		
S ^Y	S	S	L	L	L	Older Century Hitter
R			R			

(In the above table Y denotes the younger century hitter)

At this stage and the constraint of clue 2 (viz: The younger of Laxman and Rahul is the shorter of the two century hitters.) Looking at individual possibilities of following deductions would emerge:

Possibility 1: Ruled out – Sachin is the older as well as the younger century hitter – not possible

Possibility 2 and 3: Rule out – The shorter century hitter has to come out of Laxman or Rahul, but in this case the shorter century hitter is Sachin.

Possibility 6: Ruled out: The younger of Rahul and Laxman has to be the shorter century hitter. But in this case Rahul is the younger century hitter while Laxman is the older century hitter (thus Rahul is younger than Laxman) yet is the taller one of the 2 century hitters also.

Possibilities 4 and 5 cannot be eliminated as they obey all 3 clues.

Thus Sachin is the younger century hitter while Laxman is the older century hitter (a conclusion which is consistent in both possibility 4 and 5).

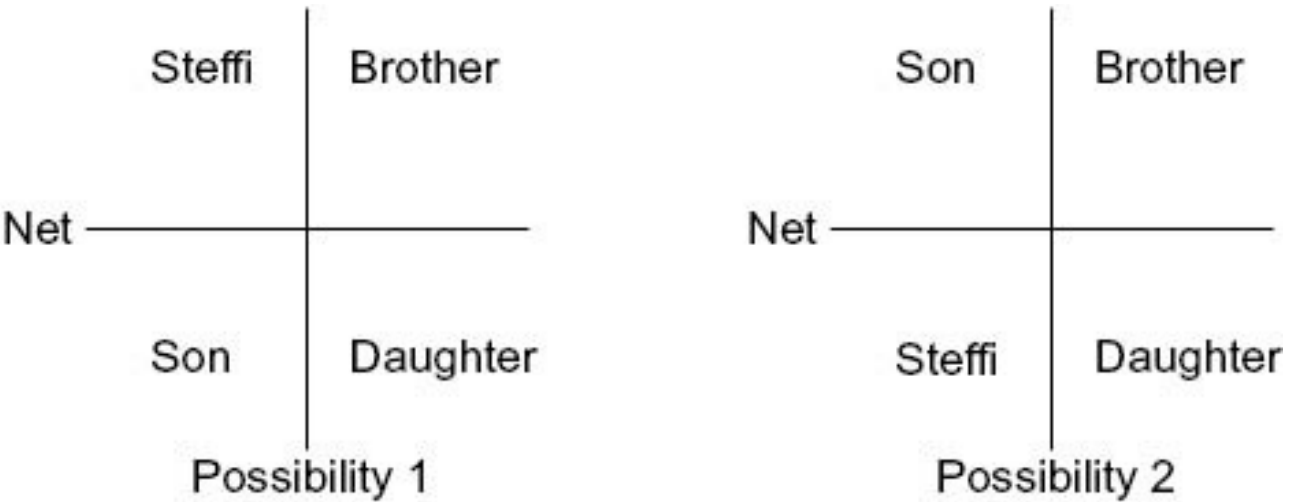
The answers are:

- (1) (b) Laxman
- (2) (a) Sachin
- (3) (a) Sachin
- (4) (b) Laxman
- (5) (c) Rahul

Solutions 6 to 8

If we see clue 1 we get that the brother and daughter of Steffi are directly across the net from each other. Once we place these two we have two ways of placing Steffi and her son.

The following figures illustrate this:



The following deductions can then be made:

Possibility 1	Possibility 2
Using Clue 2	Using Clue 2
Worst player’s sibling Æ Brother	Worst player’s sibling Æ daughter.
Hence, worst player Æ Steffi	Hence, worst player Æ Son
Also using clue 3 (Best and worst player are on the same side of the net) We get.	Also using clue 3 (Best and worst player are on the same side of the net) we get.
Best player Æ Brother	\ Best player Æ Brother

The answers are:

6. (d) Since we do not know about the worst player (as it changes from possibility 1 to possibility 2).
7. (a) The brother emerges as the best player in both possibilities.
8. Data inadequate again as the answer would change based on which possibility we consider. Since both possibilities are possible, hence (d).

Solutions 9 to 11

There are originally (by default) eight possibilities to distribute the three dishes amongst A, B and C.

(PT = Paneer Tikka, RC = Roasted Chicken)

These are:

	A	B	C
Possibility 1	PT	PT	PT
Possibility 2	PT	RC	PT
Possibility 3	PT	PT	RC
Possibility 4	RC	PT	PT
Possibility 5	RC	RC	PT
Possibility 6	RC	PT	RC
Possibility 7	PT	RC	RC
Possibility 8	RC	RC	RC

The three constraints are:

- 1. If A = PT, B= C
- 2. If B = PT, A≠ C
- 3. If C = RC, A= B

If we analyse the eight possibilities with respect to the constraints, the following results emerge:

	A	B	C	Result
Possibility 1	PT	PT	PT	Rejected, constraint 2
Possibility 2	PT	RC	PT	Rejected, constraint 1
Possibility 3	PT	PT	RC	Rejected, constraint 1
Possibility 4	RC	PT	PT	No contradiction with any constraint
Possibility 5	RC	RC	PT	No contradiction with any constraint
Possibility 6	RC	PT	RC	Rejected, constraint 2
Possibility 7	PT	RC	RC	Rejected, constraint 3
Possibility 8	RC	RC	RC	No contradiction with any constraint

This gives us the possibility matrix for what is possible:

	A	B	C
Final Possibility 1 (Possibility 4 in the table above)	RC	PT	PT
Final Possibility 2 (Possibility 5 in the table above)	RC	RC	PT
Final Possibility 3 (Possibility 8 in the table above)	RC	RC	RC

Hence the answers are:

- 9. (a) Abdul always orders RC
- 10. If C orders RC (Final possibility 3), B orders RC. Hence option (a) is correct.
- 11. If B = PT (Final possibility 1) then Charu would also eat PT. Hence (a)

Solutions 12 and 13

For convenience the squares can be numbered as:

1	2	3
4	5	6
7	8	9

It is obvious that the person who plays next will win by putting his mark in square 5. We need to hence find who will make the next move.

Obviously the 7th move (winning one in this case) would be placed by the person who has not played the previous move. Hence, we need to see as to which of the 6 moves in the grid could possibly be the sixth and last one.

A little bit of introspection will give you that the cross in the ninth square is the only possible 6th move. Hence, the next move (7th) will be that of a face.

Thus the answers are:

- 12. (b)
- 13. (b)

Solutions 14 to 19

We start off by making a grid as follows (Note: in this grid we have used clues numbered 3 and 7)

		416			
	Madhuri	Kareena	Aishwarya	Shilpa	Juhi
Amit					
Shahrukh					
Anil					
Sunil					
417 Akshay		¥			

From clue 4 we get that Anil and Amit are in different films than Aishwarya. We also know from clue 2 that Shahrukh and Aishwarya are not together and from clue 1 that Aishwarya is not with Akshay too. Also since Aishwarya is between Akshay and Amit, Aishwarya’s number could only be 418 (As 416 is Madhuri) and Amit must be 419). Also, clue 6 gives us that neither Shilpa nor Juhi have acted with Amit. Based on these realisations, the grid above transforms into:

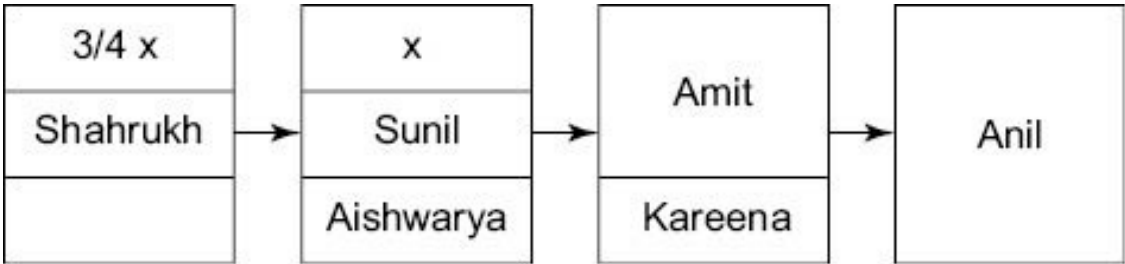
	416	419	418		
	Madhuri	Kareena	Aishwarya	Shilpa	Juhi
419 Amit	¥	✓	¥	¥	¥
Shahrukh		¥	¥		
Anil		¥	¥		
418 Sunil	¥	¥	✓	¥	¥
417 Akshay	¥	¥	¥		

At this point we need to concentrate on the time of film completion to move further in the question.

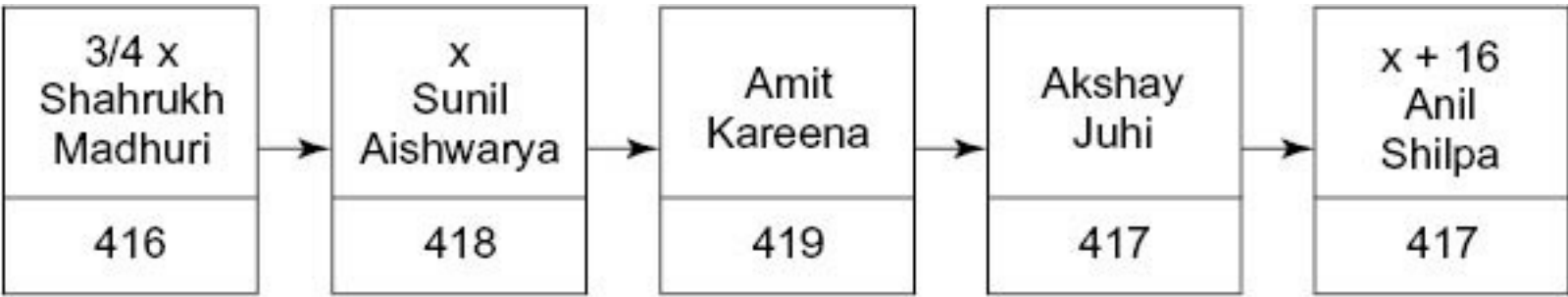
From clue 2

Shahrukh’s film takes $\frac{3}{4}$ th the time of Sunil’s film. (But we know that Sunil’s film has Aishwarya).

Hence, we conclude (from clue 2 and clue 4)



If we add the information from clue 6 to this, we realise that Shilpa and Juhi must be after Amit. Thus only Madhuri is left for Shahrukh. Also, since Anil’s film took maximum number of days Anil must be with Shilpa. We then get the following chronological figure:



Also from clue 8, we get that x must be 32 days (Sunil’s film) and Shahrukh’s film must be 24 days and Anil’s film 48 days.

The answers are:

- 14. Amit (a)
- 15. Sunil and Aishwarya (d)
- 16. 416 (d)
- 17. Juhi (c)
- 18. 32 days (c)
- 19. Shilpa (b)

Solutions 20 to 25

For this question if you try to refer to the information with respect to the country of the player you will not get any headway, but if you try to reference the information with respect to the room number you will find it easier.

An obvious question that might crop up in your mind will obviously be – “But how do I know that?” and indeed “How do i decide what variable to reference for solving a complex question like this? The answer is simple really while reading the question for the first time, try to focus on spotting the variable with respect to which the maximum number of direct clues are associated.

In this question it is clear that the maximum number of direct clues here are associated with the room number and hence we try to associate things with the room number.

From clue number 5:

Room No. 143 Æ 12 m and 8 Sixes (meal = m and sixes = S)

From clue no. 7: Room No. 145 Æ 8 m and (P–2S) (Where P is the number of sixes hit by the Pakistan player).

From clue 8: Pakistan, England and Australia can either be 141, 143 and 145 or 142, 144 and 146. But from question 20 (and it’s options) it is clear that Australia cannot be in Room 146. Thus, we get the following situation at this stage.

141	Pakistan	
142		
143	England	(12 m, 8 s)
144		
145	Australia	(8 m, P–2s)
146		

We also have the following information:

From clue 1: Room No. 142 Æ 24 m (twice the player who hits 8 sixes).

From clue 3 we have that the Indian is 8 less than the English (Meals) and 10 more than the English (Sixes). This means that the Indian is 4 m and 18 S.

From clue 2: NZ + Room No. 146 = 40 (Meals).

From clue 6: someone has (16 m and 24 S).

Now since we have to adjust New Zealand, India and Sri Lanka (which we discover from options to question 24) and all the above facts the only way to do so is as shown below.

141	Pakistan	
142	New Zealand	(24m,)
143	England	(12m, 8S)
144	India	(4m, 18S)

or

Sprite

Coke

Pepsi

as the two possible arrangements such that Coke comes between 0.6 litres and 1 litre.

However, according to clue 1, Pepsi is between Sprite and Coke and possibility 1 clearly violates this condition. Hence, we reject possibility 1.

Thus, we have possibility 2 as the only possibility left i.e.:

Pepsi = 0.6

Limca = 1

Sprite = 1.6

Coke = 2.2

We just need to arrange the placement of these 4 cold drinks in the right order.

We need to realise at this point that both Coke and Pepsi cannot be extremes. Hence, the extremes have to be made up of Limca and Sprite. This can be done in two ways:

(A)

P	Q	R	S
Limca			Sprite
(1)			1.6

In this case we need to place Coke between 0.6 and 1. Thus we get:

P	Q	R	S
Limca	Coke	Pepsi	Sprite
(1)	2.2	0.6	1.6

But we can see that clue 5 is violated. ($R > P$)

Hence, we reject this arrangement and go to the next possibility:

(B)

P	Q	R	S
Sprite	Pepsi	Coke	Limca
1.6	0.6	2.2	1

This arrangement meets all constraints and gives us the answers as:

26.

0.6 litre (a)
27.

Bottle P (a)
28.

Coke (b)
29.

1 litre (c)
30.

R (c)

31. 1.6 litre (c)

Solutions 32 to 35

Solve on the basis of the following table:

	I round			II round			III round	
C	W	Net score	C	W	Net score	C	W	Net score
2	–	50	2	–	50	2	–	80
1	1	10	1	1	10	1	1	20
0	–2	–20	0	2	–30	0	2	–40

32. 40 can be scored by:

(1) $50 - 30 + 20$

or (2) $10 + 10 + 20$. Hence option (d) is correct.

33. There are $3 \times 3 \times 3 = 27$ possible scores. Out of these three there are only 2 ways of scoring 100.

Hence 2/27. option (b)

34. There are only two ways of scoring 20 from the table viz : $50 + 10 - 40$ or $10 + 50 - 40$. In both cases there are three right answers. Hence, the required probability is zero. option (d) is correct.

35. The maximum Penalty for 2 incorrect answers would occur when they happen in the last round. Hence, the score would be $50 + 50 - 40 = 60$

Hence option (b) is correct.

Solutions 36 to 40

A Æ Ahluwalia

B Æ Bhatia

C Æ Chopra

D Æ Dayal

E Æ Eshwar

Based on clue number 1 you realise that there are 10 first and middle names for the 5 people and these are distributed as:

4 Rams (R)

3 Shyams (S)

2 Trams (T)

1 Alam (A)

From clue 2 we realise that we can put Tram in 2 ways:

Possibility (1) Both Ahluwalia (A) and Bhatia (B) are Trams (T)

T		Ahluwalia

T		Bhatia
		Chopra
		Dayal
		Eeshwar

Or

Possibilty (2) Both Chopra and Dayal are Trams

		Ahluwalia
		Bhatia
T		Chopra
T		Dayal
		Eeshwar

We now look at possibility 1 above:

Using clue 3, we can place both B and C as Shyam or neither B and C as Shyam (in which case the 3 Shyams must go to A, D and E)

Thus we have two further possibilities emerging out of possibility 1 above:

Possibility (A) for Possibility 1:

T		Ahluwalias
T	S	Bhatia
	S	Chopra
		Dayal
		Eeshwar

Possibility (B) for Possibility 1:

T	S	Ahluwalia
T		Bhatia
		Chopra
	S	Dayal
	S	Eeshwar

In each of the above scenarios we now have to place the 4 Rams.

However, in both cases both Dayal and Eshwar get named Ram, and this contradicts Clue 4. Hence we rule out this possibility.

Moving on to possibility 2 and using clue 3, the following possibilities emerge:

Possibility (A) for Possibility 2:

		Ahluwalia
	S	Bhatia
T	S	Chopra
T		Dayal
		Eeshwar

Possibility (B) for Possibility 2:

	S	Ahluwalia
		Bhatia
T		Chopra
T	S	Dayal
	S	Eeshwar

In possibility A above, when we place the 4 Rams, we again contradict clue 4 (since both D and E are named Ram).

Hence, only possibility B remains and the final names are:

R	S	Ahluwalia
A	R	Bhatia
T	R	Chopra
T	S	Dayal
R	S	Eeshwar

Hence the answers are:

36. (d) None of the 3 name combination appears.
37. (b) Chopra and Dayal
38. Mr. Bhatia (b)
39. Ram Shyam (a)
40. Mr. Ahluwalia and Mr. Eeshwar are both named Ram Shyam.
Hence (c)
41. There will be $8C_2 + 8C_2 + 4$ quarter finals + 2 semifinals + 1 final = 63 matches.
42. A team can be eliminated even if it wins 5 of its 7 matches (as 5 teams can possibly win 5 matches each) The logic for this is that in each group there are $8C_2 = 28$ matches, hence 28

winners. Thus, it is not possible for 5 teams to win 6 matches each. Hence if a team wins six matches it is safe. However, if a team wins 5 matches, 4 more teams could also have won 5 matches each and in that case the team would get eliminated. Hence, advancement is not guaranteed with 5 wins.

43. In this question we need to guarantee elimination. With 2 wins a team could still qualify (And hence elimination is not guaranteed) since there could be a scenario of $(7 + 6 + 5 + 2 + 2 + 2 + 2 + 2)$ wins giving a situation wherein at least one of the teams with 2 wins needs to qualify. Hence, only if a team has 1 win, it's elimination is guaranteed. Option (a) is correct.
44. Quarter finals, semifinals and finals. Hence 3, option (c) is correct.
45. Option (c) is possible.

It is not necessary for the winner to have more wins than any other team. Since it is possible that a team with 2 wins in the first phase and 3 more wins (Quarterfinal, semifinal and final) in the 2nd stage wins the tournament and a team with 7 wins in the first phase loses the Quarterfinal. Hence (a) is not true.

Option (b) is also eliminated as it could happen that in one group a team with 5 wins is eliminated while in the other group a team with 2 wins advances.

Option (d) is also incorrect, since in the second stage of the tournament 4 teams who lose the quarterfinal will have no wins, 2 teams which lose the semifinals will have 1 win, 1 team which loses the final will have 2 wins and the team which wins the tournament will have 3 wins.

Option (c) could happen if a team is eliminated with 5 wins in the first stage and another team from the other group goes through to the second stage with 2 wins and then wins the 3 rounds in the second stage to emerge the winner with a total of 5 wins.

Part 2

Reasoning Question Types from other MBA Exams

Sequences and Series

Sequences and series (as the name suggests) consists of questions where you are supposed to understand the logic behind a given sequence or series of number/alphabets. Based on this understanding you are supposed to determine either:

- (a) A continuation to the series
- (b) The immediate next term of the series
- or
- (c) A missing term/terms within the series.

While preparing yourself to solve such questions, you should improve your ability to spot a particular relationship between terms within the series. The common logical premises used for questions are given here.

SERIES BASED ON NUMBERS

1. Squares
2. Squares + something or squares–something e.g. next term in the series
24, 35, 48, 63, 80... will be 99 since the series is $(5^2 + 1)$, $(6^2 + 1)$, etc.
3. Cubes, cubes + something, cubes–something
4. Geometric series
5. Arithmetic series
6. Harmonic series
7. Series of constantly changing additions or multiplications, e.g.,
 - (i) 2, 6, 24, 120,..... (The terms are got by $\times 3$, $\times 4$, $\times 5$, and so on.)
 - (ii) 11, 16, 22, 29, 37,..... (The series follows a logic of +5, +6, +7, +8, and so on.)
8. Binary numbers systems or number systems with other bases like Base 3, Base 4, etc.
9. Intermingled series–

e.g., 2, 5, 6, 10, 18, 15, 54

In this series alternate terms starting with the first form a GP with common ratio 3, while the 2nd, 4th, 6th terms form an AP 5, 10, 15.....

🔍 SERIES BASED ON ALPHABETS

In such series, the most crucial aspect is to know the position of each alphabet in the alphabet series A to Z both from start to end.

Thus, the following reference numbers for each alphabet become important:

Going Forward	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabet	A	B	C	D	E	F	G	H	I	J	K	L	M
Going Back from Z	26	25	24	23	22	21	20	19	18	17	16	15	14

Going Forward	14	15	16	17	18	19	20	21	22	23	24	25	26
Alphabet	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Going back from Z	13	12	11	10	9	8	7	6	5	4	3	2	1

Notice that M and N are the two middle points of this series.

Let us now look at a few solved examples before we go into the practice exercise.

ILLUSTRATION 1

Which of the numbers given below would come next in the series of numbers?

1, 9, 25, __

- (a) 36 (b) 25
(c) 49 (d) none of these

Solution

The first number is 1, second is 9 and third is 25. We can easily observe that the numbers in the series are squares of consecutive odd numbers. Hence, the next number would be the square of 7 which would be 49. Thus Option (c) is correct.

ILLUSTRATION 2

Which of the following letters would come next in the series of letters?

Z, W, R, K, __

- (a) A (b) C
(c) B (d) D

Solution

In the given series from the end of the alphabet series, Z is the 1st alphabet, W is the 4th alphabet, R is the 9th alphabet and K is the 16th alphabet. Thus the next letter in the series will be the 25th alphabet

from the end or the second from the start. Hence, the next alphabet must be B. Thus (c) is the correct option.

ILLUSTRATION 3

What would come next in the following series of numbers?

1, 2, 10, 37, __

- (a) 62 (b) 91
(c) 101 (d) none of these

Solution

The series is following the +1, +8, +27 routine. Hence, the next number must be at an interval of +64 and should be 101. Thus Option (c) is the correct answer.

ILLUSTRATION 4

What would come next in the following series?

A₁₀, D₁₅, G₂₀, J₂₅ __

- (a) N₁₈ (b) O₂₀
(c) M₁₆ (d) none of these

Solution

In the series of letters represented above there is a gap of 2 letters between every two consecutive terms and hence, the next letter will be M (after skipping K and L). Thus, the correct answer should be M₃₀. Thus Option (d) is correct.

ILLUSTRATION 5

What should come next in the series below?

122343456_____

- (a) 45678 (b) 6789
(c) 34567 (d) none of these

Solution

We can see that the series is a group of joined series as 12, 234, 3456 and hence the next terms should be 45678. Thus Option (a) is correct.

EXERCISE

Find out the missing term:

1. 0, 3, 8, 15, 24, 35, 48?

- (a) 53 (b) 63
(c) 80 (d) none of these

2. 256, 64, 16, 4, ?
(a) 1 (b) $\frac{1}{4}$
(c) $\frac{1}{16}$ (d) none of these
3. Obtain the missing term
B, G, K, ?
(a) N (b) P
(c) M (d) L
4. 7, 15, 27, ?, 63
(a) 42 (b) 43
(c) 38 (d) none of these
5. ?, 425, 600, 825, 1100, 1425
(a) 225 (b) 300
(c) 250 (d) none of these
6. 1, 121, 12321, 1234321, ____?
(a) 123454321 (b) 12344321
(c) 12345654321 (d) none of these
7. 0.005, 0.05, ?, 5
(a) 5.50 (b) 0.05
(c) 0.5 (d) none of these
8. 31, 32, 36, 45, ?
(a) 55 (b) 56
(c) 61 (d) 62
9. 1, 5, 2, 25, 3, 125, 4, ?
(a) 144 (b) 36
(c) 625 (d) 500
10. 83, 82, 80, 77, ?
(a) 74 (b) 73
(c) 75 (d) 76
11. $2/\div\overline{3}$, $3/\div\overline{4}$, $4/\div\overline{5}$, ?
(a) $5/\div\overline{6}$ (b) $5/\div\overline{5}$
(c) $6/\div\overline{5}$ (d) none of these
12. 1, 1, 5, 49, 11, 169, 19, ?

(a) $\frac{256}{324}$	(b) $\frac{289}{361}$
13. 5, 36, 253, ?	
(a) 1749	(b) 1750
(c) 1772	(d) 1771
14. 45678912, 5678912, 567891, ?	
(a) 56789	(b) 67891
(c) 567891	(d) none of these
15. ABCDEFG, GABCDEF, FGABCDE, ?	
(a) EFGABCD	(b) GABCDEF
(c) EFGABCDE	(d) FGABCDE
16. (1, 1), (2, 16), (3, 81), ?	
(a) (4, 16)	(b) (4, 64)
(c) (4, 256)	(d) none of these
17. 1, 4, 16, 64, _____ what will be the 8 th term?	
(a) 1024	(b) 16384
(c) 4096	(d) none of these
18. 40, 24, 16, 12, 10, 9, ?	
(a) 8.5	(b) 8
(c) 7.5	(d) none of these
19. 7, 28, 70, 140, ?	
(a) 240	(b) 250
(c) 245	(d) none of these
20. 729, 1331, 1728, ?	
(a) 2180	(b) 2185
(c) 2196	(d) none of these
21. 0.7, 2.8, 11.2, 44.8, ?	
(a) 178.2	(b) 177.2
(c) 179	(d) 179.2
22. 1, $\frac{5}{4}$, $\frac{21}{16}$, _____ what will be the n^{th} term of the series?	
(a) $\{1 - (1/4)^n\}/(3/4)$	
(b) $\{1 + (1/3)^n\}/(2/3)^n$	
(c) $\{(1/3)^n + 1\}/(2/3)$	

(d) none of these

23. 600, 550, 450, 300, ?

(a) 50

(b) 0

(c) 100

(d) 150

24. 1, 2, 3, 6, 11, 20, 37, 68 ?

(a) 125

(b) 126

(c) 124

(d) 105

25. 12, 24, 36, 48, ?, 72

(a) 50

(b) 55

(c) 60

(d) 70

26. 1, 6, 11, _____ what will be its 15th term?

(a) 46

(b) 76

(c) 66

(d) 71

27. -3, 4, 23, 60, 121?

(a) 22

(b) 212

(c) 205

(d) none of these

28. 20, 26, 62, ?, 1574

(a) 125

(b) 150

(c) 278

(d) 200

29. 45, 40, 35, _____ which term will be the first negative term of the series?

(a) 10th term

(b) 11th term

(c) 12th term

(d) 13th term

30. $1/1, 4/8, 9/27, 16/64, 25/125, ?$

(a) $36/49$

(b) $49/64$

(c) $36/216$

(d) none of these

31. 1, 3, 2, 5, 3, 7, 4, 9, 5, 11, 6, ?

(a) 10

(b) 11

(c) 13

(d) 9

32. 1, 4, 27, ?

(a) 256

(b) 3125

(c) 2425

(a) none of these

33. What is the next term in the following series?

ABE, BCF, CDG, DEH, EFI, _____

(a) FGK

(b) FGJ

(c) FGL

(d) none of these

34. What is the next term in the following series?

ZYXWTSRQNM LK

(a) I

(b) G

(c) H

(d) J

35. What is the sum of infinite terms of the given series?

$4 + 4 \times 4^{1/2} + 4 \times 4^{1/2} \times 4^{1/4} + \dots$

(a) 12

(b) 16

(c) 64

(d) none of these

36. What is the next term in the following series?

1, 4, 3, 9, 5, 16, 7, 25, 9, 36, 11, ?

(a) 64

(b) 49

(c) 48

(d) 55

37. Calculate the sum of the series

$1 + 1/4 + 1/16 + \dots$

(a) $3/4$

(b) $4/3$

(c) 2

(d) none of these

38. Calculate the missing term.

625, 125, ?, 5, 1

(a) $1/5$

(b) 1

(c) 5

(d) none of these

39. Obtain the missing term.

300, 296, 287, 271, ?, 210

(a) 246

(b) 250

(c) 244

(d) none of these

40. Obtain the missing term.

12, 15, 19, ?, 30, 37

(a) 35

(b) 34

(c) 37

(d) 24

Directions for Questions 41 to 47: In each of the following number series a wrong number is given.

Find out the wrong number.

41. 31, 22, 30, -32, -89, -174
(a) 22 (b) 30
(c) -32 (d) -89
42. 4, 26, 163, 1149, 9201, 82809
(a) 26 (b) 163
(c) 82809 (d) 9201
43. 4, 39, 269, 1605, 8009, 32011
(a) 4 (b) 39
(c) 269 (d) 1005
44. 28, 84, 112, 196, 308, 504, 872
(a) 112 (b) 196
(c) 308 (d) 872
45. 14, 20, 369, 1288, 12961, 155432
(a) 14 (b) 20
(c) 369 (d) 1288
46. 14400, 7200, 4800, 3600, 2800, 2400
(a) 7200 (b) 4800
(c) 2800 (d) 2400
47. 300, 421, 592, 815, 1104, 1465
(a) 421 (b) 1104
(c) 815 (d) 592

Direction for Questions 48 to 50: Study the following information carefully to answer the questions given below:

S Q A 5 N % T 7 B 4 # J E \$ 2 T D * 1 8 H 3 U @ 9 F W © K

48. How many such consonants are there in the above arrangement, each of which is immediately followed by a vowel but not immediately preceded by a number?
(a) One (b) Two
(c) Three (d) More than three
49. How many such consonants are there in the above arrangement, each of which is either immediately preceded by a vowel or immediately followed by a symbol but not both?
(a) None (b) One
(c) Two (d) Three

50. Which of the following is the seventh to the left of the fifteenth from the left end in the above arrangement?
- (a) H (b) B
(c) 1 (d) 7
51. The letters skipped between adjacent letters is in the order of 1, 2, 3, 4, ... Which alternative follows this rule ?
- (a) EFJNS (b) EGJOS
(c) EGJNS (d) EGJNT
52. Which of the following will come in place of the question mark (?) in the following sequence?
16D7, 18G10, 21KI4, 25P19, ?
- (a) 30V20 (b) 30V25
(c) 30V24 (d) 29V25

Directions Questions 53 to 55: Complete the following series:

53. BZ, HT, NN, ?, ZB
- (a) LF (b) SX
(c) TH (d) TI
54. J2Z, K4X, I7V, ?, HI6R, F22P
- (a) G11T (b) G11S
(c) L12S (d) G11U
55. ane ____ ba _____ ebb _____ neb _____ an _____ bb
- (a) e b b a b (b) b B a b e
(c) B b a b e (d) b n a b e
56. In a row of children, Bali is seventh from the left and Moti is fourth from the right. When Bali and Moti exchange positions, Bali will be fifteenth from the left. What will be Moti's position from the right?
- (a) Eighth (b) Fourth
(c) Eleventh (d) Twelfth
57. Which of the following cannot be a number of the series 64, 125, 216, 343, 512?
- (a) 8 (b) 729
(c) 27 (d) 999
58. Complete the series
E-5, G-7, I-9, K-11, ?
- (a) L-13, N-14 (b) M-13, O-15

(c) L-12, M-14

(d) K-12, M-14

59. An application was received by class teacher in the afternoon of a week day. Next day she forwarded it to the Student Coordinator, who was on leave that day. The Student Coordinator put up the application to the principal next day in the evening. The Principal studied the application and disposed off the matter on the same day, i.e, Saturday. Which day was the application received by the inward clerk?

(a) Monday

(b) Wednesday

(c) Tuesday

(d) Thursday

60. Which letter should be the tenth letter to the left of the ninth letter from the right, if the first half of the alphabet of English are reversed ?

(a) D

(b) F

(c) E

(d) I

Answer Key

1. (b)	2. (a)	3. (a)	4. (b)
5. (b)	6. (a)	7. (c)	8. (c)
9. (c)	10. (b)	11. (a)	12. (d)
13. (c)	14. (b)	15. (a)	16. (c)
17. (b)	18. (a)	19. (c)	20. (d)
21. (d)	22. (a)	23. (c)	24. (a)
25. (c)	26. (d)	27. (b)	28. (c)
29. (b)	30. (c)	31. (c)	32. (a)
33. (b)	34. (c)	35. (b)	36. (b)
37. (d)	38. (d)	39. (d)	40. (d)
41. (b)	42. (c)	43. (a)	44. (d)
45. (c)	46. (c)	47. (c)	48. (a)
49. (b)	50. (d)	51. (c)	52. (b)
53. (c)	54. (a)	55. (d)	56. (d)
57. (d)	58. (b)	59. (d)	60. (b)

Solutions

1. The series is following the pattern +3, +5, +7, +9, +11, +13 and hence the next term should be

$48 + 15 = 63$. Answer is option (b).

2. The given series is a GP with common ratio $\frac{1}{4}$. Hence, option (a) is correct.
3. The series is defined by the 2nd, 7th, 11th term of the alphabet. Hence, the next term would be the 14th term i.e., N. Option (a) is the correct answer.
4. The series follows a pattern of +8, +12, +__, +20. Obviously we need to add 16 for the missing term. Hence, 43 i.e., option (b) is the correct answer.
5. The series follows a pattern of +175, +225, +275, +325. Hence, the first term should be 300, so the answer is option (b).
6. The series is representing the values of 1^2 , 11^2 , 111^2 , 1111^2 . Hence, the next value would be $11111^2 = 123454321$, so option (a) is the answer.
7. A GP with common ratio 10. Hence, the missing term will be 0.5 i.e., option (c).
8. +1, +4, +9, thus +16 and hence the next term should be 61. Correct answer is option (c).
9. There are two series intermixed with one another. One of the series is placed at the odd places of the series and the other is placed at the even places. The series at the even places of the series is 5, 25, 125 and hence its next term should be 625. Option (c) is correct answer.
10. The logic of the series is -1, -2, -3 and hence -4 should give us 73. So, the answer is option (b).
11. Obviously the answer has to be option (a).
12. There are two series intermingled in the given series of numbers. 1, 5, 11, 19 and the other series is 1^2 , 7^2 , 13^2 and $19^2 = 361$. Hence, option (d) is the answer.
13. The series follows the pattern of $\nabla 7 + 1$. Hence, the next number in the series is $253 \nabla 7 + 1 = 1772$. Option (c) is the answer.
14. We are consecutively deleting one digit from the left and then one digit from the right and then the next move has to be to delete one digit from the left. Hence, the answer is option (b).
15. The next term is formed by removing the last alphabet in the previous term and attaching it to the first alphabet of the next term. Hence, the next term in the series would be EFGABCD. So the answer is option (a).
16. The relationship followed in each bracket is the fourth power of the first digit in the bracket. Hence, option (c) is correct.
17. 256,1024,4096,16384. Option (b) is correct.
18. The series follows a logic of -16, -8, -4, -2, -1. Hence, the next term in the series would be $9 - 0.5 = 8.5$. Correct answer is option (a).
19. The addition between various terms of the series follows a logic of $7 \nabla 3$, $7 \nabla 6$, $7 \nabla 10$. Hence, the next addition should be $7 \nabla 15$. Hence, the next term in the series would be $140 + 105 = 245$. So, the answer is option (c).
20. The series represents 9^3 , 11^3 , 13^3 and hence the next term should be 15^3 ; correct answer is (d).
21. GP with common ratio 4. Hence, the next term would be 179.2 i.e., option (d).
22. The formula for the n^{th} term can be easily verified from the given terms of the series. Option

- (a) is correct.
23. The series follows the logic of $-50, -100, -150$ and hence the next term of the series should be $300 - 200 = 100$. Correct answer is option (c).
 24. Beginning with 6, each term of the series is the sum of the previous 3 terms. Hence, the next term would be 125. So, the answer is option (a).
 25. AP with common difference 12. Hence, the unknown term is 12. So option (c) is the answer.
 26. AP with common difference 5. Hence, 15th term is 71. Answer is option (d).
 27. $+7, +19, +37, +61$. Hence, the next term in the series would be $121 + 91 = 212$, answer is (b).
 28. We are consecutively adding increasing powers of 6. Hence, option (c) is correct.
 29. The first negative term will be -5 (11th term). Hence, option (b) is the answer.
 30. The numerator is represented by n^2 and the denominator is represented by n^3 . Hence, the next term in the series would be $36/216$, option (c) is the answer.
 31. Two series are intermixed. 1, 2, 3, 4, 5, 6 and 3, 5, 7, 9, 11. Hence, the next term should be 13. So option (c) is the answer.
 32. The general term of the series is n^n . Hence, the next term in the series would be $4^4 = 256$. Option (a) is the answer.
 33. The next term in the series would be FGJ. Hence, option (b) is the answer.
 34. The given series starts with the last 4 alphabets of the English language and then gives a break of 2 alphabets, followed by the next four alphabets and so on. Hence, the next term in the series would be H (after skipping J and I). So option (c) is the answer.
 35. On close observation of the series you will realise that every subsequent term reduces in value from the previous term. Hence, by estimating values we can estimate that the sum of this series to infinite terms would be 16. The correct answer is option (b).
 36. Two series are intermingled with each other as 1, 3, 5, 7, 9, 11 and $2^2, 3^2, 4^2, 5^2, 6^2$. Hence, the next term in the series would be $7^2 = 49$, so the correct answer is option (b).
 37. Infinite GP with common ratio $\frac{1}{4}$. Hence, Sum to infinity $= 1/(3/4) = 4/3$. Answer is option (b).
 38. GP with common ratio $1/5$. Hence, option (d) is correct.
 39. The series follows the logic of $-4, -9, -16$ and hence the missing term must be $271 - 25 = 246$. So option (d) is correct.
 40. The series follows the logic of $+3, +4, +5, +6$ and $+7$. Hence, the missing term would be $19 + 5 = 24$. So option (d) is the correct answer.
 41. Obviously 30 is the misplaced number because all other terms are in a reducing series here. Option (b) is correct.
 42. The logic followed in this series is $4 \nabla 5 + 6 = 26$; $26 \nabla 6 + 7 = 163$; $163 \nabla 7 + 8 = 1149$; $1149 \nabla 8 + 9 = 9201$. Only the last number in the series (82809) breaks this trend. Instead the correct value should have been $9201 \nabla 9 + 10 = 82819$. Thus, Option (c) is correct.
 43. The logic followed in this series is $39 \nabla 7 - 4 = 269$; $269 \nabla 6 - 9 = 1605$; $1605 \nabla 5 - 16 =$

- 8009; $8009 \div 4 - 25 = 32011$. Only the movement from 4 to 39 is unexplained by this trend. Thus, 4 is the incorrect number in the series. Option (a) is correct.
44. The logic of this series is that the sum of two numbers makes the third one in the series. This we can observe by seeing $28+84=112$, $84+112=196$ and so on. The only number that does not satisfy this logic is $308 + 504$, which should be 812 and not 872. Thus, 872 is the wrong number in the series.
45. The logic is $14 \div 4 - 36 = 20$; $20 \div 6 + 49 = 169$; $169 \div 8 - 64 = 1288$, $1288 \div 10 + 81 = 12961$; $12961 \div 12 - 100 = 155532$. Obviously, the incorrect value in the series is 369 and Option (c) is the correct answer.
46. The logic of the series is $14400 \div \frac{1}{2} = 7200$, $7200 \div \frac{2}{3} = 4800$, $4800 \div \frac{3}{4} = 3600$, $3600 \div \frac{4}{5} = 2880$. Obviously the number 2800 is out of place. Option (c) is correct.
47. The logic of the additions are 121, 171, 221, 291, 361 and so on. Thus, the number series should be 300, 421, 592, 813, 1104, 1465. The number 815 is misplaced in the above series and hence Option (c) is incorrect.
48. T7 is the only instance of a consonant followed by a number and not preceded by a number. Option (a) is correct.
49. 5N% is the only instance of a consonant either followed by a symbol or preceded by a vowel but not both. Option (b) is correct.
50. The fifteenth from the left is '2' while the 7th to the left of 2 is '7' itself. Option (d) is correct.
51. EGJNS follows the skipping of 1, 2, 3 & 4 letters respectively as we can see in:
EFGHIJKLMNOPQRS
52. Hence, option (c) is the correct answer. There are three series in the sequence. The numbers to the left of the letter— 16, 18, 21, 25 are increasing continuously by 1 more than the previous increase, i.e., the series of increases in these numbers are + 2, +3, +4 and the next number should be +5; thus $25 + 5 = 30$.
The letters DGKP form a series where 2, 3 and 4 letters are skipped every time. Hence, the next letter would be V. Similarly, 7, 10, 14, 19 would give 25 as the next term. Thus, the correct answer would be 30V25 option (b).
53. For the first alphabet add 6 to the position number to get the next first alphabet of the next element of the series and for the second alphabet subtract 6 from the position and we'll get the required number. Option (c) is correct.
54. For the first alphabet we jump from one alphabet to the next alphabet and then to the alphabet right before the first jump. The numbers move with a gap of 2,3,4... For the last alphabet count from Z leaving one alphabet in the count.
G11T would be correct. Option (a) is correct.
55. It is a repetition of the string: anebb. The missing alphabets in the blanks are: bnabe. Option (d) is correct.
56. Since, Bali's count from the left goes up by 8, Moti's count from the right would go down by 8 too. Option (d) is correct.
57. All the numbers in the series are perfect cubes. 999 is not a cube of any natural number.

Hence, Option (d) does not belong to the series.

58. M13 & O15 should be the correct terms. Option (b) is correct

59. A gap of two days is there in receiving and the disposal of the application. Thursday would be the correct answer option (d).

60. We are looking for the 19th letter from the right in the series:

MLKJIHGFEDCBA NOPQRSTUVWXYZ.

The letter would be F as can be counted from the above series. Option (b) is correct.

Blood Relations

Questions on blood relations are common under the logical reasoning section of aptitude exams. As the name suggests, questions on blood relations involve working out the familial relationships between people in a family.

There are essentially two kinds of questions that can be classified under this area: *viz*

- (A) Puzzle type questions with a family relationship component
- (B) Statement based relationship questions

Let us look at these one by one:

(A) Puzzle type questions: This question type normally involves situations where there is some family relationship that is part of the puzzle. The following illustrations would make it clear to you:

ILLUSTRATION 1

In a family of six persons—Abhay, Banta, Cathy, Deepak, Emily and Fatima, there are three males and three females. There are two married couples and two persons are unmarried. Each one of them likes different cold drinks.

Emily who likes Coke, is the mother-in-law of Abhay, who is the wife of Cathy. Deepak is the father of Fatima and he does not like Thumps Up or Pepsi; Banta likes Limca and is the sister of Fatima who likes Sprite. Cathy does not like Pepsi. Fanta is another cold drink.

1. Who among the following likes Thumps Up?
 - a. Cathy
 - b. Deepak
 - c. Abhay
 - d. Data inadequate
2. How is Fatima related to Emily?
 - a. Brother
 - b. Son

- c. Father
d. Daughter
3. One of the married couple's is:
- a. Deepak-Banta
 - b. Deepak-Emily
 - c. anta-Fatima
 - d. Emily-Fatima
4. Which of the following cold drinks is liked by Abhay?
- a. Thumps Up
 - b. Fanta
 - c. Pepsi
 - d. Data inadequate
5. How many sons does Emily have?
- a. Four
 - b. Three
 - c. Two
 - d. One

ILLUSTRATION 2

In a family gathering, there are two males who are grandfathers and four males who are fathers. In the same gathering there are two females who are grandmothers and four females who are mothers. There is at least one grandson or a granddaughter present in this gathering. There are two husband-wife pairs in this group. These can either be a grandfather and a grandmother, or a father and a mother. The single grandfather (whose wife is not present) has two grandsons and a son present. The single grandmother (whose husband is not present) has two granddaughters present. A grandfather or a grandmother present with their spouses does not have any grandson or granddaughter present.

1. What is the minimum number of people present in this gathering?
- a. 10
 - b. 12
 - c. 14
 - d. 16

ILLUSTRATION 3

Direction for Questions 1 to 3: Read the following information carefully and answer the questions given below.

In a joint family of seven persons L, M, N, O, P, Q and R two are married couples.

'R' is a housewife and her husband is a lawyer. 'N' is the wife of 'M', 'L' is an engineer and is the granddaughter of 'R', and 'O' is the father-in-law of 'N', a doctor, and father of 'P', a professor. 'Q' is L's brother and M's son.

1. How is P related to M?
- a. Son
 - b. Brother

	c. Daughter	d. Data inadequate
2.	How is Q related to O?	
	a. Grand father	b. Uncle
	c. Grand son	d. Data inadequate
3.	Who is M's father?	
	a. O	b. R
	c. N	d. Data inadequate

ILLUSTRATION 4

Direction for Questions 1 to 4: Answer the questions based on the following information.

Hello, Ciao and Vanakkam are related to each other.

- I. Among the three, one is Hello's legal spouse, another is Ciao's sibling and the third is Vanakkam's sister-in-law.
- II. Hello's legal spouse and Ciao's sibling are of the same sex.

(Assume: There are no gay marriages.)

1. Who is the married man?

a. Hello	b. Ciao
c. Vanakkam	d. Cannot be determined
2. Who is the married woman?

a. Hello	b. Ciao
c. Vanakkam	d. Cannot be determined
3. The number of males amongst the group is

I. 1	II. 2
a. I	b. II
c. I or II	d. Neither I nor II
4. Who is the Ciao's sibling?

a. Hello	b. Ciao
c. Vanakkam	d. Cannot be determined

Solutions

Illustration 1

While solving logical reasoning questions, always try to place the direct information first and keep any indirect clues aside for later use.

In this question you will find that:

Emily likes Coke→ Direct clue

Deepak is the father of Fatima → Direct clue

Deepak does not like Thumsup or Pepsi → Indirect clue,... and so on.

Keep in mind the following points while solving all questions on logical reasoning:

- 1. First use the direct clues.
- 2. In the case of a family tree the diagram should essentially be a multilevel diagram to ensure clarity of being able to see multiple generations on the same diagram.
- 3. Males and females should be marked separately with some symbols. One suggestion is the females can be marked inside a circle/bracket or with an underlined letter as A or alternately males can be marked with a + sign and females with a – sign.
- 4. Relationships should be marked using horizontal links or vertical links.

The following diagrams will emerge from the clues

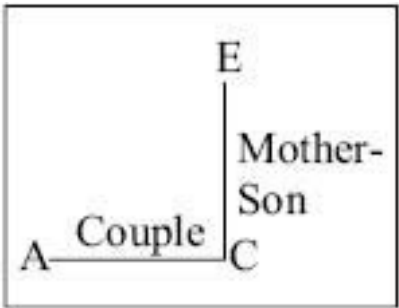


Figure 1

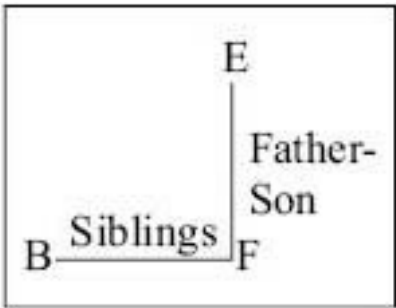
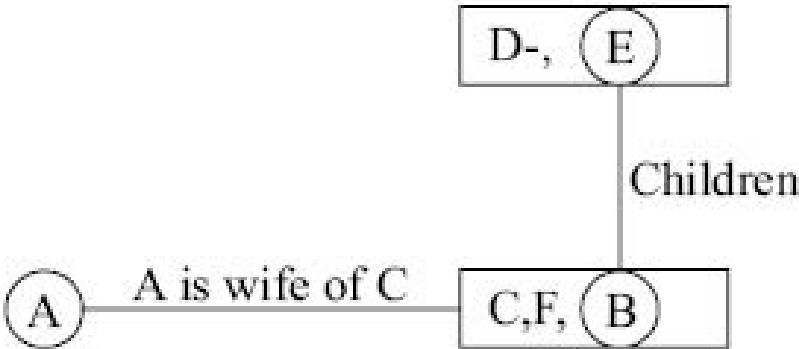


Figure 2

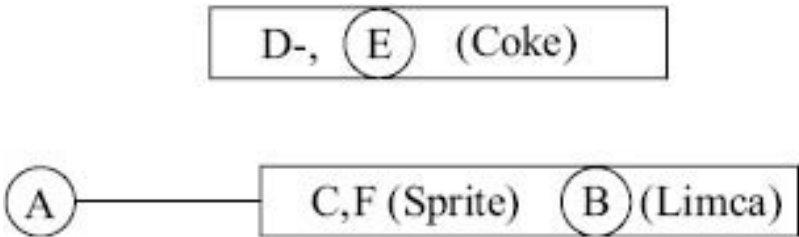
At this stage, you know that A, B and E are the three females and C, D and F are the three males; you also know that A and C are one of the two couples.

Hence, the other couple must be D and E. (They must be married to each other since they have children.)

This leads to a combined diagram which looks as below:



To this information, add the likes and dislikes of individuals as follows:



Further, D doesnot like Thums Up or Pepsi, hence he must like Fanta; Cathy does not like Peps

(hence Thums Up) and Abhay likes Thums Up.

The answers are:

- 1. Cathy
- 2. Fatima is Emily’s son
- 3. Deepak-Emily is a married couple
- 4. Thums Up
- 5. Two sons (C & F).

Illustration 2

The family needs to have a minimum of 12 people.

GF1-GM1, GF2, GM2

F1-M1, F2, M2

Generation 1	Grandfather 1 & his wife grandmother 1	Single grandfather 1	Single grandmother 1
Generation 2	Father-Mother (husband-wife pair)	Father	
Generation 3		Two boys	Two girls

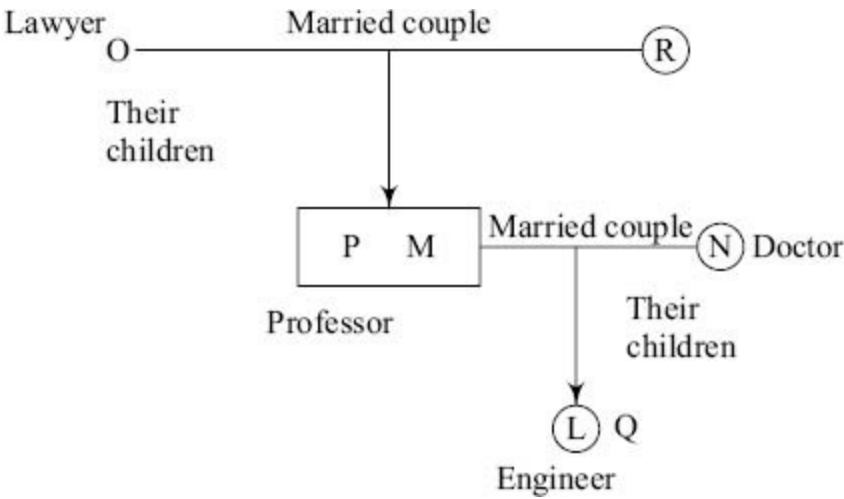
The above table gives us a total of 11 people who are compulsorily present. We need to add 1 more female (who is a mother) to this group as there are 4 mothers in the gathering.

Thus a total of 12 people.

Option b is correct.

Illustration 3

The following family relationships emerge



The answers are:

- 7. Option 2 (Brother)
- 8. Option 3 (Grandson)
- 9. O is M’s father. Option a is correct.

Illustration 4

From the statement that Ciao's sibling and Hello's legal spouse are of the same sex, we can conclude that Hello cannot be the sibling of Ciao (because Hello's sex would be different from his/her legal spouse's sibling). Hence, Ciao's sibling must be Vanakkam.

This gives us four basic possibilities for the husband wife pair:

- (1) Hello (male) – Vanakkam (female; Hello's wife as well as Ciao's sibling); Ciao (Vanakkam's sibling; sex not known). In this case, the situation does not allow for Vanakkam's sister-in-law. Hence, we can reject this as a possible solution to the situation.
- (2) Hello (female) – Vanakkam (male; Hello's husband as well as Ciao's sibling); Ciao (Vanakkam's sibling – sex not known). In this case again, the situation does not allow for Vanakkam's sister-in-law. Hence, we can reject this as a possible solution to the situation.
- (3) Hello (male) – Ciao (female; Hello's wife as well as Vanakkam's sibling); Vanakkam (Ciao's sibling – female as she has to be the same sex as Hello's spouse). In this case, again the situation does not allow for Vanakkam's sister-in-law. Hence, we can reject this as a possible solution to the situation.
- (4) Hello (female) – Ciao (male; Hello's husband as well as Vanakkam's sibling); Vanakkam (Ciao's sibling – male as she has to be the same sex as Hello's spouse). In this case, the last condition of Vanakkam's sister-in-law is met because Hello is the sister-in-law of Vanakkam. Thus, we conclude that this is the only possible solution given the clues. The answers then become:

1. Ciao is the married man—Option b.
2. Hello is the married woman—Option a.
3. There are exactly 2 males—Ciao and Vanakkam— Option b.
4. Vanakkam—Option c.

(B) Statement based relationship finding questions: In this question type, we typically have to determine the relationship between two individuals whose relationship is mentioned in a roundabout manner.

In such questions, it is advisable to look at a problem from one's own perspective, i.e., if you place yourself as the central figure in the relationship matrix, the solving of the question becomes much easier as the solution anchors itself to pre-existing relationships in your own mind. The following examples would make things clear to you.

Example 1

1. Introducing a boy, Ralf said, "His mother is the only daughter of my mother-in-law." How is Ralf related to the boy?
 - (a) Uncle
 - (b) Father
 - (c) Brother
 - (d) Husband

Example 2

2. Pointing to a man in a photograph, a woman said, "His brother's father is the only son (and child) of my grandfather." How is the woman related to the man in the photograph?
 - (a) Mother
 - (b) Sister
 - (c) Aunt
 - (d) Daughter

Example 3

3. If Nina says, “Anna’s father Rick is the only son of my father-in-law Mick.” Then how is Bridgette, who is the sister of Anna, related to Mick?
- (a) Daughter (b) Wife
(c) Daughter-in-law (d) None of these

Example 4

4. ‘ $X + Y$ ’ means ‘X is the father of Y’, ‘ $X - Y$ ’ means ‘X is the wife of Y’, ‘ $X \times Y$ ’ means ‘X is the brother of Y’, ‘ $X \parallel Y$ ’ means ‘X is the mother of Y’ and ‘ $X = Y$ ’ means ‘X is the sister of Y’. On the basis of this information, what does $X + Y - Z$ mean?
- (a) X is the father-in-law of Z
(b) Z is the father of X
(c) Z is the neice of X
(d) X is the brother of Z

Solutions

Example 1: Mother-in-law’s only daughter means wife. Thus the statement could be read as “His mother is my wife.” Thus, Ralf must be the father of the boy.

Example 2: Read this as “his father” is my grandfather’s only child. Obviously this means that the woman would be the sister of the man in the photograph. Option b is correct.

Example 3: From the statement, it is clear that Mick is Rick’s father and Rick is Anna’s father. Bridgette and Anna would thus be granddaughters of Mick. Option 4 is correct.

Example 4: $X + Y$ means that X is the father of Y & $Y - Z$ means that Y is the wife of Z. Thus, X is the father-in-law of Z. Option 1 is correct.

The key skills involved in solving questions on blood relations include:

- The ability to structure the family tree in terms of visualising the number of generations, the number of people in each generation, etc.
- The ability to understand and use vital clues leading to information such as: husband-wife relationships, father-son relationships, mother-son relationships, sibling relationships
- The ability to keep count of the number of people being talked about in the problem
- The ability to convert clues written in language form into visual cues so that you do not need to read the text again and again. Also, converting the language clues to visual cues is critical for the purpose of being able to ‘see’ all the clues at one go.

EXERCISE

1. Pointing to a lady on the stage, Devika said, “She is the sister of the son of the wife of my husband”. How is the lady related to Devika?
- (a) Sister-in-law (b) Sister
(c) Daughter (d) Cousin

2. Arvind said, "This girl is the sister of the grandson of my mother". How is this girl related to Arvind?
 - (a) Daughter
 - (b) Niece
 - (c) Sister
 - (d) Can't be determined
3. Pointing to a lady, a man said, "Her husband is the only son of my mother". How is the lady related to man?
 - (a) Wife
 - (b) Daughter
 - (c) Father-in-law
 - (d) None of these
4. Arun told Meesum, "Yesterday I met the son of my wife's father-in-law". How is Arun related to that man?
 - (a) Brother
 - (b) Father
 - (c) Son-in-law
 - (d) Niece
5. Pointing to a man, Manisha said, "He is the youngest son of my father-in-law's only son". How is Manisha related to this youngest son's father?
 - (a) Daughter
 - (b) Sister
 - (c) Wife
 - (d) Can't be determined
6. A family consists of a husband and wife, their three sons and two daughters, three wives of three sons. How many females are in this family?
 - (a) 5
 - (b) 6
 - (c) 7
 - (d) none of these
7. A man has two wives A and B . A is Sunny's step-mother. How is Sunny related to B ?
 - (a) Step-daughter
 - (b) Sister-in-law
 - (c) Son
 - (d) Can't be determined

Directions for Questions 8 to 10: If $a + b$ means a is sister of b ,

$a - b$ means a is brother of b ,

$a \forall b$ means a is daughter of b ,

$a \sqcap b$ means a is mother of b .

8. Which of the following relationship shows that l and n are wife and husband?

- (a) $l \cap m \nsubseteq n$ (b) $l - m \nsubseteq n$
 (c) $l + m \nsubseteq n$ (d) None of these
9. How many females does this relationship shows?
 $l + m - n + o - p \nsubseteq q$
 (a) 2 (b) 3
 (c) 4 (d) Can't be determined
10. The relationship $p + q - r \nsubseteq s \cap t$ shows that
 (a) p, q, r, s are children of t
 (b) p, q, r, t are children of s
 (c) p, q, r are children of t and s
 (d) p, q, r, s, t are all siblings.

Directions for Questions 11 to 15: If $a + b$ means a is daughter of b ,
 $a - b$ means a is husband of b ,
 $a \nsubseteq b$ means a is brother of b .

11. What does the relation $p \nsubseteq q - r$ show?
 (a) p is son-in-law of r
 (b) p is brother of r
 (c) r is wife of p
 (d) None of these
12. If $h + i \nsubseteq j + k \times l + m \nsubseteq n$, then what is the present generation of h . Assume that the oldest generation in this group is the first generation?
 (a) 2nd (b) 3rd
 (c) 4th (d) None of these
13. Which of the following statements does not hold?
 (a) $a + b \times c$ (b) $a - b \nsubseteq c$
 (c) $a + b + c$ (d) $a + b - c$
14. From the statement $a \nsubseteq b \nsubseteq c \nsubseteq d$, which of the following statement is not necessarily true?
 (a) b is the brother of a
 (b) c is the brother of a
 (c) d is brother of c
 (d) a, b, c are male
15. From the statement $p - q + r \nsubseteq s$, how is q related to s ?
 (a) Niece (b) Sister

- (c) Mother (d) None of these
16. Anwar's father is the only son of Mahesh's father. How is Mahesh related to Anwar?
- (a) Father
(b) Brother
(c) Can't be determined
(d) None of these
17. Rahul has two mothers. Shalini is the step-daughter of Seema and step-sister of Rahul. How is Seema related to Rahul?
- (a) Step-mother
(b) Mother
(c) Can't be determined
(d) None of these
18. If
- I. A is brother of B
 II. B is brother of C
 III. C is brother of D
 IV. D is sister of E .
- Then which of the following statements is not necessarily true?
- (a) D is sister of C
 (b) B and C are brothers
 (c) A , B , C are male and D is a female
 (d) D and E are sisters
19. Pointing to a photograph, Vandana says, "She is the elder daughter of my mother's husband". How is person in photograph related to Vandana?
- (a) Sister (b) Mother
(c) Sister-in-law (d) None of these
20. Pointing to the man in the platform, Siddhartha said, "He is the brother of the father of my mother's son". How is this man on the platform related to Siddhartha?
- (a) Nephew (b) Father
(c) Brother (d) None of these

Directions for Questions 21 to 23:

$a * b$ means a is the brother of b .

$a @ b$ means a is the daughter of b .

a \$ b means a is the sister of b .

21. Which of the following shows the relationship p is the paternal uncle of n ?

- (a) $n\$o@p$
- (b) $n@o\$p$
- (c) $n@o*p$
- (d) None of these

22. From the following statement, what is the relationship between n and s ?

$n\$o@p*q\$r*s$

- (a) Grandmother
- (b) Grandfather
- (c) Aunt
- (d) Can't be determined

23. If $a \$b\$c@d@e*f*g$, then how many males and females are there respectively?

- (a) 4, 3
- (b) 3, 4
- (c) 5, 2
- (d) Can't be determined

Directions for Questions 24 to 25: P, Q, R, S, T went on a picnic. P is the son of Q but Q is not the father of P. R is the son of S, who is the brother of P. T is the wife of S.

24. How is P related to S ?

- (a) Nephew
- (b) Brother
- (c) Father
- (d) None of these

25. How many males are present in this group?

- (a) 1
- (b) 2
- (c) 3
- (d) 4

26. Genuflecting (bending) in front of a portrait, Raman said, "She is the only daughter of the mother of my brother's sister". How is that person related to Raman?

- (a) Uncle
- (b) Father
- (c) Mother
- (d) None of these

27. Pointing towards a lady in a Polaroid, Victor said, "She is the daughter of the father of the sister of my brother". How is the lady in photograph related to Victor?

- (a) Daughter
- (b) Wife
- (c) Mother
- (d) None of these

28. A woman, pointing towards a man said, "He is my mother's mother's only son". How is the woman related to the man?

- (a) Mother
- (b) Cousin
- (c) Niece
- (d) Aunt

29. A woman presents a man as the son of the brother of her mother. How is the man related to the woman?

- (a) Nephew (b) Son
(c) Cousin (d) Uncle
30. Pointing towards a boy, Aruna said to Pushpa, “The mother of his father is the wife of your grandfather (Mother’s father)”. How is Pushpa related to that boy?
(a) Sister (b) Niece
(c) Cousin sister (d) Wife
31. Looking at a man, Darren said, “Your only brother is the father of my daughter’s father”. How is the gentleman related to Darren?
(a) Father (b) Grandfather
(c) Brother-in-law (d) Uncle
32. Pointing to a lady, a person says to his friend, “She is the granddaughter of the elder brother of my father”. How is the girl in the photograph related to the man?
(a) Niece (b) Sister
(c) Aunt (d) Sister-in-law
33. Pointing to a man in a photograph Amelia said, “His mother’s only daughter is my mother”. How is Amelia related to that man?
(a) Nephew (b) Sister
(c) Niece (d) Wife
34. While discussing Pam’s ancestry, Rick quizzes Pam while pointing towards a man, “His mother is the only daughter of your father.” How is Pam related to that person?
(a) Aunt (b) Mother
(c) Daughter (d) None of these
35. Pointing to a man in a photograph, a woman said, “His brother’s father is the only son of my grandfather”. How is the woman related to the man in the photograph?
(a) Mother (b) Sister
(c) Aunt (d) Daughter
36. Facing a man in the eye, Nero said, “Your son is my son’s uncle.” How is the man related to Nero?
(a) Brother (b) Father
(c) Uncle (d) Grandfather
37. Nikky, who is Roland’s daughter, says to Irene, “Your mother Rita is the younger sister of my father, who is the third child of Sylvester”. How is Sylvester related to Irene?
(a) Maternal-uncle (b) Father
(c) Grandfather (d) Father-in-law

38. A woman said, “His wife is the only daughter of my father”, after introducing a man. How is that man related to the woman?
- (a) Husband (b) Brother
(c) Father-in-law (d) None of these
39. Showing the woman in the park, Veronica said, “She is the daughter of my grandfather’s only son.” How is Veronica related to that woman?
- (a) Cousin (b) Sister
(c) Father (d) Uncle
(e) None of these
40. A is the brother of B and C. D is C’s mother. E is A’s father. Which of the following statement cannot be definitely true?
- (a) B is E’s son. (b) E is B’s father.
(c) D is A’s mother. (d) A is D’s son.
41. If X says that his mother is the only daughter of Y’s mother, how is Y related to X?
- (a) Aunt (b) Father
(c) Brother (d) Uncle
42. Jack said, “This girl is the wife of the only grandson of my mother.” How is Jack related to the girl?
- (a) Father (b) Father-in-law
(c) Grandfather (d) Husband
43. A woman Manpreet asks a man Harpreet, “You are the brother of my uncle’s daughter. How are you related to me?”. What was the man’s answer?
- (a) Cousin (b) Son
(c) Brother-in-law (d) Nephew
44. Allen told Beatrix, “Yesterday, I met the only brother of the daughter of my grandmother.” Whom did Allen meet?
- (a) Cousin (b) Brother
(c) Nephew (d) Father
45. A woman presents a man as the son of the brother of her mother. How is the man related to the woman?
- (a) Nephew (b) Son
(c) Cousin (d) Uncle

Directions for Questions 46 and 47: Study the following information carefully and answer the questions given below.

Raina, Murli, Haiden, Patel, Gony, Balaji and Morkel are seven members in a family, out of which there are three females and four males. There are two managers, two lawyers, one teacher, one engineer and one doctor. No lady is either a teacher or an engineer. Haiden is a lawyer and is married to Raina, who is a teacher. Balaji, the engineer, is married to Patel, who is neither a lawyer nor a doctor. No two ladies have the same profession. Murli is the sister of Morkel, who is a manager.

46. What is Gony's profession?

- (a) Manager
- (b) Lawyer
- (c) Manager or Lawyer
- (d) Data inadequate

47. Which of the following is the group of males?

- (a) Raina, Murli, Balaji and Morkel
- (b) Gony, Balaji, Patel and Morkel
- (c) Raina, Haiden, Gony and Balaji
- (d) Raina, Gony, Balaji and Morkel

Directions for Questions 48 and 49: Study the following information carefully and answer the questions given below.

P, Q, R, S, T, U and V are seven members of a family belonging to three generations. There are two married couples—one each of first and second generation respectively. They travel in three different cars—Bentley, Lamborghini and Ferrari so that no car has more than three members and there is at least one female in each car. R, who is a granddaughter, does not travel with her grandfather and grandmother. Q travels with his father T in Lamborghini. U travels with her granddaughter S in Bentley. P travels with her daughter in Ferrari.

48. How many female members are there in the family?

- (a) Three
- (b) Four
- (c) Five
- (d) None of these

49. Which of the following is one of the married couples?

- (a) DB
- (b) BC
- (c) EF
- (d) None of these

Direction for Question 50: Read the information given carefully and answer the question.

In a family of six persons—Pranay, Qayamat, Ravi, Shashi, Tanveer, Umed, there are three males and three females. There are two married couples and two persons are unmarried. Each one of them reads different magazines, which are Cosmopolitan, Vogue, India Today, Economist, Stardust and Femina.

The following facts about the family members are also known:

Tanveer, who reads *Cosmopolitan*, is mother-in-law of Pranay, who is wife of Ravi. Shashi is the father of Umed and he does not read *Vogue* or *Femina*. Qayamat reads *Stardust* and is the sister of Umed, who reads *India Today*. Ravi does not read *Femina*.

50. Who among the following reads *Vogue* and what is the relation between the person who reads *Vogue* and *Qayamat*?

- (a) Ravi, Sister (b) Ravi, Father
(c) Umed, sister (d) Shashi, Father

Answer Key

1. (c)	2. (a)	3. (a)	4. (a)
5. (c)	6. (b)	7. (c)	8. (a)
9. (d)	10. (b)	11. (d)	12. (c)
13. (b)	14. (c)	15. (a)	16. (a)
17. (b)	18. (d)	19. (a)	20. (d)
21. (c)	22. (d)	23. (d)	24. (b)
25. (c)	26. (d)	27. (d)	28. (c)
29. (c)	30. (c)	31. (d)	32. (a)
33. (c)	34. (b)	35. (b)	36. (b)
37. (c)	38. (a)	39. (b)	40. (a)
41. (d)	42. (b)	43. (a)	44. (d)
45. (c)	46. (b)	47. (d)	48. (c)
49. (c)	50. (a)		

Solutions

- From Devika's perspective, wife of my husband means me. Then, my son's sister means my daughter. Hence, option (c) is correct.
- Grandson of my mother means my son. My son's sister means my daughter. Hence, option (a) is correct.
- Only son of my mother, means me. Hence, the situation transforms into I am her husband. Hence, the lady is the man's wife. So the correct option is (a).
- The son of my wife's father-in-law would be either me or my brother. Since Arun says that he met this person it must be the brother. Hence, option (a) is the answer.
- Looking at it from Manisha's perspective, "my father-in-law's only son" would be my

husband. Thus the youngest son of this person would also be Manisha's son. Hence, this person's father would be Manisha's husband and Manisha would be the wife. Option (c) is the answer.

6. Wife + two daughters + 3 wives of the three sons = 6. Hence, option (b) is the answer.
7. Sunny must be B 's son. Hence, option (c) is the correct answer.
8. Go through the options, $l \sqcap m$ means l is the mother of m . $m \forall n$ means m is the daughter of n . Thus, m must be the daughter of l and n . Hence, (a) is the correct option.
9. $l + m - n + o - p \forall q$ can be read as l is the sister of m , m is the brother of n , n is the sister of o , o is the brother of p and p is the daughter of q . Thus, l , n and p are females, m and o are males and we do not know about q 's sex. Hence, we cannot be sure about the number of females in this relationship string. Hence, option (d) is correct.
10. $p + q - r \forall s \sqcap t$ reads as: p is the sister of q , q is the brother of r , r is the daughter of s and s is the mother of t . Thus, option (b) is correct.
11. $p \forall q - r$ can be read as p is the brother of q and q is the husband of r . Thus p must be the brother-in-law of r . Hence, option (d) is correct.
12. $h + i \times j + k \times l + m \forall n$ means h is the daughter of i , i is the brother of j , j is the daughter of k , k is the brother of l , l is the daughter of m and m is the brother of n . Thus, if m and n are the first generation, k and l are the second, i and j are the third generation, h is the fourth generation. To solve this question in short, you only need to realise that the use of the $+$ sign signifies a generation change. Since the $+$ sign is used thrice, h must be the fourth generation. Hence, option (c) is the answer.
13. Option (b) says: $a - b \forall c$, this does not hold since a must be the husband of b (who is a female) and b is the brother of c (which cannot happen). Hence, option (b) is the answer.
14. $a \times b \forall c \forall d$ means a is the brother of b , b is the brother of c and c is the brother of d . This makes options (a), (b) and (d) as correct. Only option (c) is not necessarily true since d could be b 's sister too. Hence, (c) is the answer.
15. $p - q + r \forall s$ reads as p is the husband of q , q is the daughter of r and r is the brother of s . Thus, q must be s 's niece. Hence, option (a) is the correct answer.
16. Anwar's father being the only son of Mahesh's father, means that Mahesh must be Anwar's father. Option (a) is the answer.
17. Mother, hence, option (b) is correct.
18. A , B , C are siblings and brothers of each other. D is their sister but we cannot say anything about E 's sex (whether E is male or female and hence brother or sister is unknown). Hence, (d) is correct.
19. Sister. Hence, option (a) is the answer.
20. My mother's son means me or my brother, father of my mother's son means my father. Brother of my father means my uncle. Hence, option (d) is correct.
21. $n@o*p$ reads, n is the daughter of o and o is the brother of p . Hence, p becomes n 's paternal uncle. So, option (c) is correct.
22. It is clear that s 's sex cannot be determined. Hence, the relationship between n and s cannot

be determined. Option (d) is the answer.

23. Again here, g's sex is indeterminable. Hence, the answer cannot be determined. Option (d) is the answer.

Solutions 24 to 25

P is the son of *Q* but *Q* is not the father of *P* means that *Q* must be the mother of *P*. Also, *R* is the son of *S*, who is the brother of *P* means that *S* and *P* must be brothers and *R* is *S*'s son. Also, since *T* is the wife of *S*, *R* must be *T*'s son also.

Consolidating these relationships we get:

Q mother of *S* and *P* (brothers). Also, *S*'s wife is *T* and their son is *R*.

24. *P* is *S*'s Brother. Hence, (b) is correct option.
25. *S*, *P* and *R* are males. Hence, option (c) is correct.
26. Raman's brother's sister would be same as Raman's sister. This makes Raman son of the mother and the brother of the person, while that person would become Raman's sister. Hence Option (d) is the correct answer.
27. Victor's brother's sister's father will be Victor's father as well and the daughter of the father will be Victor's sister. Hence, Option (d).
28. It makes the man the brother of the woman's mother, that makes the woman the man's niece. So Option (c) is the correct answer.
29. The man is the son of the woman's mother's brother, that makes the man and the woman cousins. So option (c) is correct.
30. The father of the boy is brother of Pushpa's mother. That makes Pushpa that boy's cousin sister. Hence (c) is the correct option.
31. According to the clue the man is brother of Darren's father. This makes the gentleman Darren's uncle. Hence, Option (d).
32. It would make the man uncle of the lady, as he would be the son of her grandfather's brother. Therefore (a) is the correct option.
33. Amelia's mother is that man's sister. It makes Amelia that man's niece. So (c) is correct.
34. Option (a) could have been correct but, it has been mentioned that the mother is the only daughter. This only means that Pam must be the mother of that person. Hence, (b).
35. According to the clue, the man is also grandson of the woman's grandfather. So (b) is the correct option.
36. The uncle of Nero's son is Nero's brother that makes the man Nero's father. Hence Option (b).
37. Rita's father is Sylvester who is Roland's father. It makes Irene Sylvester's granddaughter. So (c) is the right option.
38. Has to be the husband. Hence, Option (a).
39. This means Veronica and the woman have the same father. It makes them sisters. Hence Option (b).
40. Two liberties taken; first, the gender of B is not there in the question, neither is the

relationship with E. Therefore (a) is the correct option.

41. Y must be a man as his sister is the only daughter of his mother. So Y is X's uncle. Therefore (d).
42. The grandson is Jack's son, so it makes Jack this girl's father-in-law. Hence (a).
43. The man is the son of the woman's uncle, i.e., the man is the woman's cousin. Hence (a).
44. The clue makes the man son of Allen's grandmother i.e., the man can be Allen's father or uncle. Since, the options do not contain uncle, we have to conclude it is the father. So (d) is the right option.
45. The man is the son of the woman's mother's brother, that makes the man and the woman cousins. Therefore (c) is the correct answer.

Solutions 46 and 47

From the clues we can see that no lady is either a teacher or an engineer. Hence these have to be males. Now since Raina is a male, Haiden is a female because Haiden is a lawyer and is married to Raina. Balaji the engineer is married to Patel. Hence Balaji is a male and Patel is a female so Patel cannot be teacher or engineer. It is also given that she is neither a lawyer or a doctor. Thus, she is a manager.

Again, Murli is sister of Morkel who is the manager. Morkel is a male because no two females have the same profession and Patel is a female and a manager. On the same grounds, Murli cannot be lawyer hence she is a doctor. By elimination of clues Gony is a lawyer and a male.

Now let us tabulate all the conclusions in a table:

Person	Profession	Gender
Raina	Teacher	Male
Murli	Doctor	Female
Haiden	Lawyer	Female
Patel	Manager	Female
Gony	Lawyer	Male
Balaji	Engineer	Male
Morkel	Manager	Male

Now we can answer the questions.

46. Option (b)
47. Option (d)

Solutions to 48 and 49

On the basis of the given clues we get the following information:

Car	Persons travelling in car

Bentley	U(F), S(F)
Lamborghini	Q(M), T(M)
Ferrari	P(F), ?(F)

Besides this we came to know that R is a female but we still do not know the gender of V. But it is given that there is at least one female in each car. The above table shows that Lamborghini has a vacant seat for a female passenger. Hence, the seventh person must be a female to fulfill the condition. Hence, V is a female. But we still do not know in which car R and V are travelling knowing that both are not in the same car. Now we need to construct a family tree:



Since R does not travel with her grandfather and grandmother, R is not in Bentley, hence R is in Lamborghini. We are still not aware of V's position in the family tree.

48. Option (c)
49. Option (c)
50. From the given information of the readership, we can build a table as follows:

	Payal	Qayamat	Ravi	Shashi	Tanveer	Umed
<i>Cosmopolitan</i>	X	X	X	X	√	X
<i>Vogue</i>	X	X	√	X	X	X
<i>India Today</i>	X	X	X	X	X	√
<i>Economist</i>	X	X	X	√	X	X
<i>Stardust</i>	X	√	X	X	X	X
<i>Femina</i>	√	X	X	X	X	X

- (a) Tanveer and Shashi are a couple.
- (b) Pranay and Ravi are a couple.
- (c) Ravi, Umed and Qayamat are brothers and sisters.

Hence Option (a) is the correct answer.

Direction Test

Questions on directions are standard ones that are asked in most aptitude exams, hence are a common component in the study of reasoning. As the name itself suggests, questions about directions would involve reasoning based on the eight directions on a map – viz: north, northeast, east, southeast, south, southwest, west and northwest. This question type requires a student to visualise these directions and the movement of an individual/relative positioning of places on a map.

The key skills involved in solving questions based on directions are the following:

- (i) The ability to understand and interpret the clues written in plain language in terms of what it means direction wise
- (ii) The ability to order the clues in the correct order of usage (as explained in the theory of logical reasoning)
- (iii) The ability to understand basic mapping concepts like what are the basic directions, what direction one would start facing if one turns right while going north or for that matter even what direction one would be facing if one turns 45° right while moving southwards, etc.
- (iv) The ability to create a picture to represent the flow as mentioned in the problem.

Illustrated below are the solutions to a few typical questions on directions. We would urge you to first have a look at the questions and try to solve the same on your own before looking at the solutions provided.

Example 1

Direction for Questions 1 to 3: Answer the questions based on the following information.

The city K is 30 km to the southeast of Z while Y is 50 km to the northwest of K. Also, H is 38 km to the southeast of Y. L lies in the direct route between Y and K and its distance from H is 14 km. G also lies on this route and is exactly midway between L and Y.

1. A car starting from K at 9 am and running at a constant speed towards Y reaches H at 9.24 am and then reaches G at
 - (a) 9.18 am
 - (b) 10.16 am

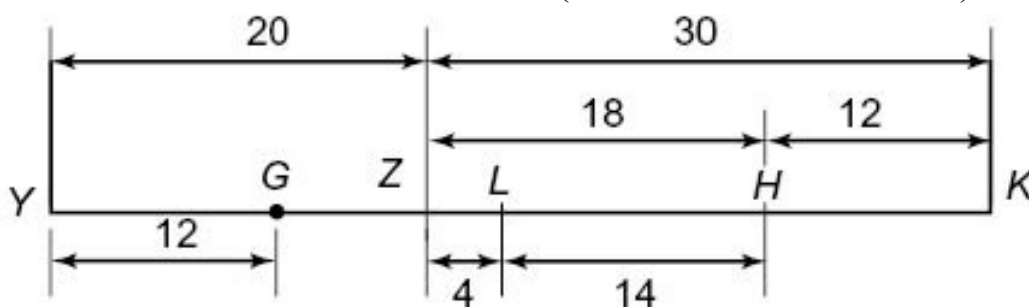
- (c) 10.36 am (d) 10.42 am
2. If M is 1 km to the southeast of L, then it is exactly midway between
- (a) H and L (b) Y and K
- (c) H and Z (d) None of these
3. The distance from G to H is
- (a) 26 km (b) 24 km
- (c) 12 km (d) 16 km

Solutions to Example 1

The figure below shows the respective positioning of the cities K, H, L, Z, G and Y.

From the figure we can deduce the answers using the following thinking:

- (1) The car covers K to H—a distance of 12 kms in 24 minutes according to the figure (starting at 9 am and reaching at 9:24 am). From H to G, the distance is 26 kms. (18 H to Z + 8 Z to G) Since the car has covered 12 kms in 24 minutes, it is obvious that it is taking 2 minutes to cover 1 km. We also know that the speed of the car is constant throughout. Hence, the car would take another 52 minutes to cover the 26 km distance between H to G. This means that the car would reach G at 10:16 am (52 minutes after 9:24 am). Hence, Option (b) is correct.



- (2) The total distance between Y and K is 50 km (20 km from Y to Z and 30 km from Z to K). If M is 1 km southeast of L, it means that M is $4+1 = 5$ km from Z. This would also mean that M is 25 km from Y. Hence, M would be exactly midway between Y and K. Option (b) is correct.
- (3) G to Z, the distance is 8 km (20 km from Y to Z – 12 km from Y to G). Further, from Z to H the distance is 18 km (from the figure based on the logic that if H is 38 km southeast of Y and Z is 20 km southeast of Y, the distance from Z to H would be $38 - 20$). Total distance would be $8 + 18 = 26$ km. Option (a) is correct.

Example 2

Direction for Questions 4 to 6: Refer to the table given below.

There are six cities viz., Amsterdam, Bhubaneshwar, Calgary, Denver, El Dorado and Frankfurt. Their positions with respect to one another on a map are described through the five clues given below.

Calgary is to the south of Frankfurt, but to the west of Denver.

Frankfurt is to the south of El Dorado which is east of Denver.

Amsterdam is south of Bhubaneshwar which is west of Frankfurt.

El Dorado is south of Amsterdam which is west of Calgary.

Denver is south of Frankfurt which is west of Amsterdam.

4. Which of the following are situated to the northeast of at least one other city?
- (a) Bhubaneshwar, Amsterdam and El Dorado

(b) Amsterdam and El Dorado

(c) Bhubaneshwar, Amsterdam

(d) Amsterdam, Frankfurt and Denver
5. Which of the following are to the northeast of Frankfurt?
- (A) Amsterdam

(B) El Dorado

(C) Calgary
- (a) A only

(b) B only

(c) A and C

(d) A and B
6. Which of the following statements cannot be derived from the given information?
- (a) Bhubaneshwar is to the west of Amsterdam.

(b) Denver is to the south of Amsterdam.

(c) Denver is to the south of Calgary.

(d) Amsterdam is to the west of El Dorado.

Solutions to Example 2

It can be concluded that the northsouth distribution of the cities would be one of the following:

Possibility 1	Possibility 2
Bhubaneshwar	Bhubaneshwar
Amsterdam	Amsterdam
El Dorado	El Dorado
Frankfurt	Frankfurt
Denver	Calgary
Calgary	Denver

The eastwest placement would be as follows:

Bhubaneshwar	Frankfurt	Amsterdam	Calgary	Denver	El Dorado

The grid possibilities based on these two arrangements would be as follows:

Possibility 1:

Bhubaneshwar					
		Amsterdam			
					El Dorado
	Frankfurt				

				Denver	
			Calgary		

Possibility 2:

Bhubaneshwar					
		Amsterdam			
					El Dorado
	Frankfurt				
			Calgary		
				Denver	

Based on these we can answer the questions as follows:

- Looking at the above tabular picture of the placement of the cities as northsouth or eastwest, we can see that El Dorado and Amsterdam are the only cities that satisfy this condition. Denver and Calgary could be northeast to each other depending on which possibility we consider—in Possibility 1 Calgary is not northeast of any city and hence we can eliminate the possibility of Calgary being northeast of at least one other city. Similarly on the basis of Bhubaneshwar being west most cannot be to the northeast of any city (as Denver would. Option (2) is correct.
- Both A and B. Hence, Option (d) is correct.
- Option (c) cannot be concluded from the information as we cannot decide on the northsouth placement between Calgary and Denver.

Example 3

- Jack runs 10 m south from his flat, turns left and walks 23 m, again turns left and walks 40 m, then turns right and walks 5 m to reach his office. In which direction is the office from his house?

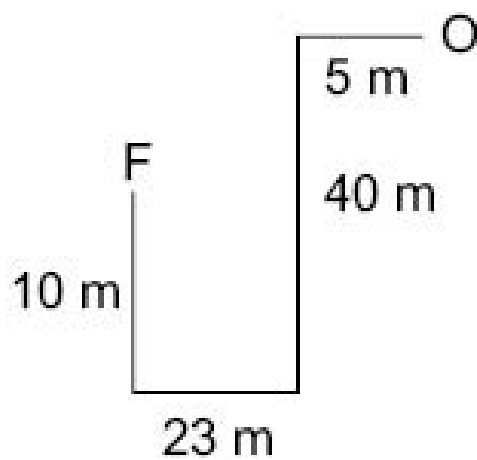
(a) East

(b) Northeast

(c) Southwest

(d) North

Solution to Example 3



When we will look from F (Flat) to O (office) in the figure it can be observed that the direction is northeast. Option (b) is correct.

Example 4

2. I am facing north. I turn 90° in the clockwise direction and then 135° in the same direction and then 270° anti-clockwise. Which direction am I facing now?
- (a) southwest (b) south
(c) west (d) northwest

Solution to Example 4

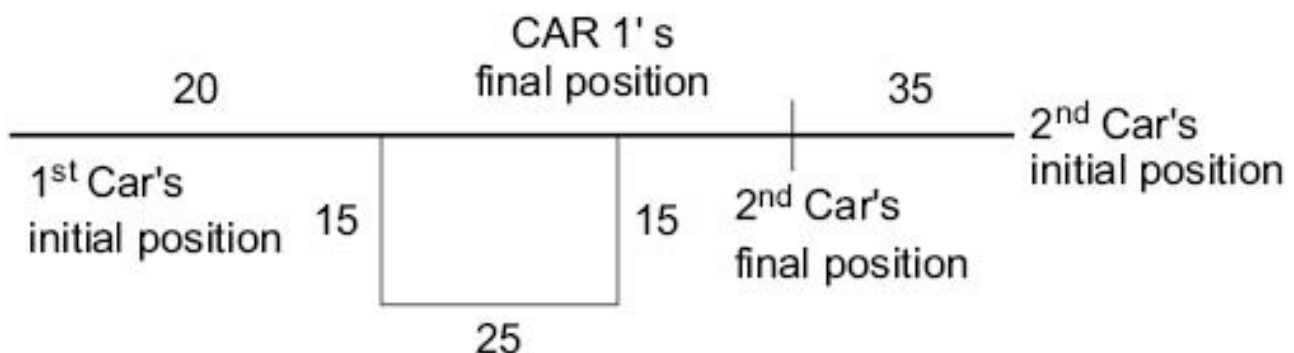
After turning 90° I am looking in the east direction, then after turning 135° in the same direction I would be facing the southwest direction. At last after turning 270° anticlockwise I would be facing the northwest direction. Option (d) is correct.

Example 5

Two cars start from the opposite points of straight part of the National Highway 8, 100 km apart. The first car runs for 20 km. It then takes a detour—takes a right turn goes straight for 15 km. It then turns left, runs for another 25 km and then takes the straight connecting road to reach back on the main road. In the meantime, due to a minor breakdown, the other car has run only 35 km along the main road. What would be the distance between the two cars at this point?

- (a) 20 km (b) 30 km
(c) 45 km (d) 10 km

Solution to Example 5



From the above figure it is clear that Car 1 would move 45 kms along the highway while Car 2 would

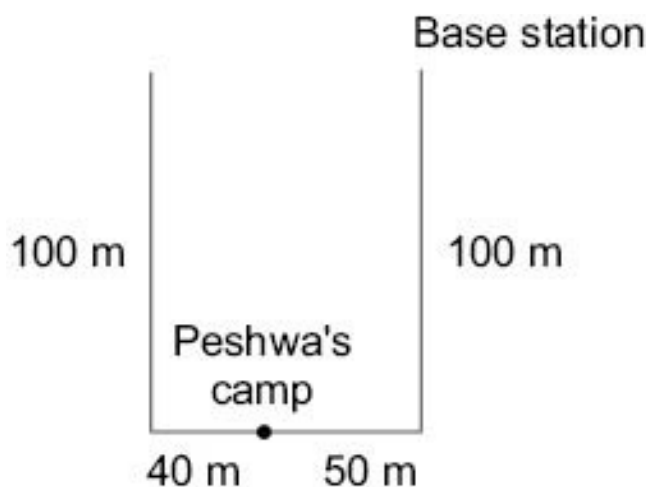
run 35 kms along the same highway. Naturally, the distance between the two cars at this time would be 20 km. Option (a) is correct.

Example 6

A messenger was returning to his base station which was in front of him to the north. When his base station was 100 m away from him, he turned to the left and moved 50 m to deliver the last message to the Peshwa's troops. He then moved in the same direction for 40 m, turned to his right and moved 100 m. How many meters away he was now from his base station?

(a) 0	(b) 150
(c) 90	(d) 100

Solution to Example 6



Option (c) is correct.

EXERCISE

Direction for Questions 1 to 4: Answer the questions independent of each other.

- A watch in Huckleberry Finn's house reads 4:30. If the minute hand points towards the West, in which direction does the hour hand point?
(a) Northeast (b) Southwest
(c) Northwest (d) North
- Hanuman, while looking for the *Sanjeevani* booty travels 3 km to the west, turns left and goes 3 km, turns right and goes 1 km, again turns right and goes 3 km. How far is he from the starting point?
(a) 7 km (b) 6 km
(c) 5 km (d) 4 km
- Raveena walks 10 km south from her house, turns left and walks 25 km, again turns left and walks 40 km, then turns right and walks 5 km to reach her office. In which direction was the office from her house?
(a) Southwest (b) Northeast

(c) East

(d) North

For the above question, what is the distance of her office from her home?

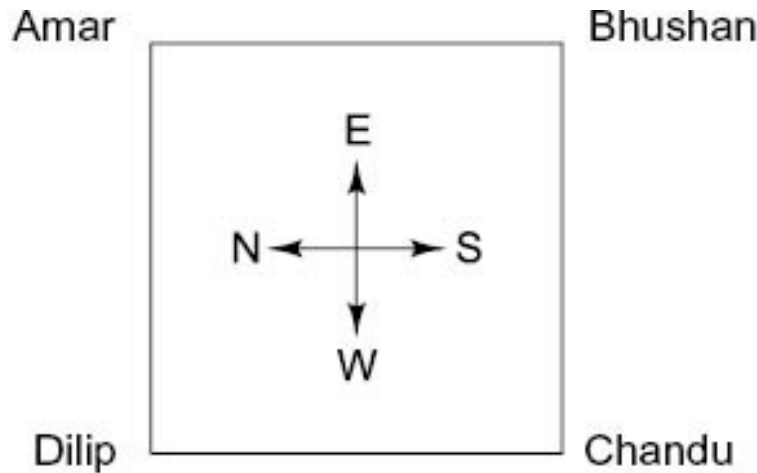
(a) 30

(b) $30\sqrt{2}\frac{1}{2}$

(c) $45\sqrt{2}\frac{1}{2}$

(d) None of these

Directions for Questions 5 to 9: These questions are based on the diagram given below showing four persons Amar, Bhushan, Chandu and Dilip stationed at the four corners of a square piece of plot as shown.



5. Amar starts crossing the plot diagonally. After walking half the distance, he turns right (90°), walks some distance and turns left. Which direction is A facing now?
- (a) Northeast (b) North
(c) Northwest (d) Southeast
6. From the original position given in the above figure, Amar and Chandu move one side length clockwise and then cross over to the corner diagonally opposite; Bhushan and Dilip move one side length anticlockwise and cross over to the corner diagonally opposite. The original configurations Amar-Bhushan-Chandu-Dilip (ABCD) has now changed to
- (a) CBDA (b) DCBA
(c) BDAC (d) ACBD
7. From the original position, Bhushan and Dilip move one and a half length of sides clockwise and anti-clockwise respectively. Which one of the following statements is now true?
- (a) Bhushan and Dilip are both at the midpoints between Amar and Chandu.
(b) Bhushan is at the midpoint between Amar and Chandu, and Dilip is at the corner originally occupied by Amar.
(c) Dilip is closer to Amar than he is to Chandu and Bhushan is closer to Chandu than he is to Amar.
(d) Dilip is closer to Chandu than he is to Amar and Bhushan is closer to Amar than he is to Chandu.
8. From the positions in the original figure, Bhushan and Amar move diagonally to opposite

corners and then one side each clockwise and anticlockwise respectively. Chandu and Dilip move three sides each anticlockwise and clockwise respectively. Where is Amar now?

- (a) At the northwest corner
 - (b) At the southeast corner
 - (c) At the northeast corner
 - (d) At the southwest corner
9. After the movements given in the above questions, who is at the northwest corner?
- (a) Amar
 - (b) Chandu
 - (c) Bhushan
 - (d) Dilip
10. A road network has parallel and perpendicular roads running north-south or east-west only. Junctions/Intersections on this road network are marked as A, B, C, D... All roads are at exactly half a kilometer distance from each other. The following is known about junctions A, B, C, H and X.
- ‘A’ is east of ‘B’ and west of ‘C’, ‘H’ is southwest of ‘C’ and southeast of B. ‘B’ is southeast of ‘X’. Which junctions are the farthest south and the farthest east?
- (a) H, B
 - (b) H, C
 - (c) C, H
 - (d) B, H
11. The Suvarna Rekha river flows from west to east and on the way turns left and goes in a quarter circle around a Shiv temple, and then turns left in right-angles. In which direction is the river finally flowing?
- (a) North
 - (b) South
 - (c) East
 - (d) West

Directions for Questions 12 to 14: Read the situation given below to answer these questions.

j, k, l, m, n, o, p, q and r are nine huts. l is 2 km east of k. j is 1 km north of k and q is 2 km south of j. p is 1 km west of q while m is 3 km east of p and o is 2 km north of p. r is situated just in middle of k and l while n is just in middle of q and m.

12. Distance between k and l is:
- (a) 2 km
 - (b) 1 km
 - (c) 5 km
 - (d) 1.5 km
13. Distance between k and r is:
- (a) 1.41 km
 - (b) 3 km
 - (c) 2 km
 - (d) 1 km
14. Distance between p and q is:
- (a) 4 km
 - (b) 2 km
 - (c) 1 km
 - (d) 3 km

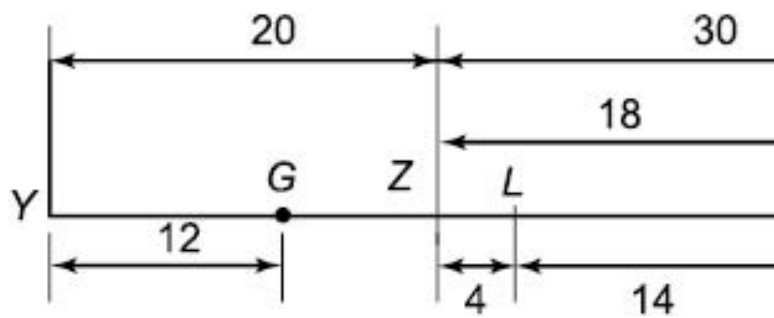
Directions for Questions 15 to 19: Study the following information carefully to answer these questions.

All the streets of a city are either perpendicular or parallel to one another. The streets are all straight. Streets N, O, P, Q and R are parallel to one another. Streets S, T, U, V, W, X and Y are parallel to one another.

- (i) Street N is 1 km east of Street O.
 - (ii) Street O is $\frac{1}{2}$ km west of Street P.
 - (iii) Street Q is 1 km west of Street R.
 - (iv) Street S is $\frac{1}{2}$ km south of Street T.
 - (v) Street U is 1 km north of Street V.
 - (vi) Street W is $\frac{1}{2}$ km north of Street X.
 - (vii) Street W is 1 km south of Street Y.
15. If W is parallel to U and W is $\frac{1}{2}$ km south of V and 1 km north of T, then which two streets would be $1\frac{1}{2}$ km apart?
- (a) U and W
 - (b) V and S
 - (c) V and T
 - (d) W and V
16. Which of the following possibilities would make two streets coincide?
- (a) X is $\frac{1}{2}$ km north of U
 - (b) P is 1 km west of Q
 - (c) Q is $\frac{1}{2}$ km east of N
 - (d) R is $\frac{1}{2}$ km east of O
17. If street R is between O and P, then distance between N and Q is:
- (a) $\frac{1}{2}$ km
 - (b) 1 km
 - (c) 1.5 km
 - (d) 1.5–2 km
18. If R is between O and P, then which of the following is false?
- a) Q is 1.75 km west of N
 - (b) P is less than 1 km from Q
 - (c) R is less than 1 km from N
 - (d) Q is less than 1 km from O
19. Which of the following is necessarily true (given the basic clues)?
- (a) R and O intersect
 - (b) Q is 2 km west of O
 - (c) Q is at least 2 km west of N
 - (d) Y is 1.5 km north of X

20. Usain runs 100 m south from his house, turns left and runs 250 m, again turns left and runs 400 m, then turns right and runs 50 m to reach to the stadium. In which direction is the stadium from his house?
- (a) Southwest (b) Northeast
(c) East (d) North
21. The front door of Kiran's house is towards the south. From the backside of her house she walks 50 metres straight then turns towards the left and walks 100 metres and after that turns right and stops after walking 100 metres. Now Kiran is facing which direction?
- (a) East (b) South
(c) West (d) North
22. A boy starts walking straight towards the north and walks 10 feet, then he turns to his left and walks 5 feet, then he turns to his left and walks another 5 feet, then again he turns to his left and walks 10 feet and then he turns to his right and walks 2 feet. How far is he now from his starting point?
- (a) 5 feet (b) 2 feet
(c) $\sqrt{34}$ feet (d) 7 feet
23. A policeman goes 20 km east and then turning to the south he goes 30 km and then again turns to his left and goes 10 km. How far is he from his starting point?
- (a) 30 km (b) 20 km
(c) 10 km (d) 40 km
24. I walk 1 km to my east then I turn to the south and walk for 5 km. Next, I turn east and walk 2 km. After this I turn to the north and walk for 9 km. How far am I from my starting point?
- (a) 5 km (b) 4 km
(c) 6 km (d) Can't be determined
25. A man walks 5 metres straight and then 10 meters to the right. After this he continuously turns left and every time walks 10, 5 and 10 meters respectively. How far is he now from his starting point?
- (a) $5\sqrt{3}$ metres (b) $3\sqrt{5}$ metres
(c) $5\sqrt{2}$ metres (d) 10 metres
26. Karan's house is south facing. From the front door of his house Karan started walking and after walking 20 metres straight he turned to his left and walked 50 metres. After this he turned to his right and walked 80 metres. Find the distance between the point from where he finished his walk and the door of his house.
- (a) $50\sqrt{5}$ metres (b) $5\sqrt{50}$ metres
(c) 100 metres (d) 120 metres

27. A man started walking towards north, he walks 10 metres and then turns to his right, walks 5 metres and turns to his right again and walks 10 metres and turns to his left, walks 7 metres and then turns to his right. At this point in which direction is he facing?
- (a) East (b) South
(c) Southeast (d) Southwest
28. If Southeast becomes east and Northwest becomes west and all the other directions are changed in the same direction. Then what will be the direction for north?
- (a) Northwest (b) Southeast
(c) Southwest (d) Northeast
29. If Northwest becomes south and southwest becomes east and all the other directions change in the similar manner, then what will be the direction for north?
- (a) Southeast (b) Northeast
(c) North (d) None of these
30. At a crossing there was a direction pole, which was showing all the four directions in correct manner. But due to wind it turns in such a manner that now west pointer is showing South. A man went to the wrong direction thinking that he was traveling East. In what direction he was actually traveling?
- (a) South (b) West
(c) North (d) Can't say
31. A direction pole at a crossing, due to an accident turns in such a manner that now east pointer is showing southwest. A traveler went to wrong direction thinking that he was travelling south. In what direction was he actually traveling?
- (a) Southwest (b) Westnorth
(c) Northeast (d) Eastsouth
32. Aman, Raman, Saman and Chaman are standing on the four corners of a square carpet as shown in the figure here.

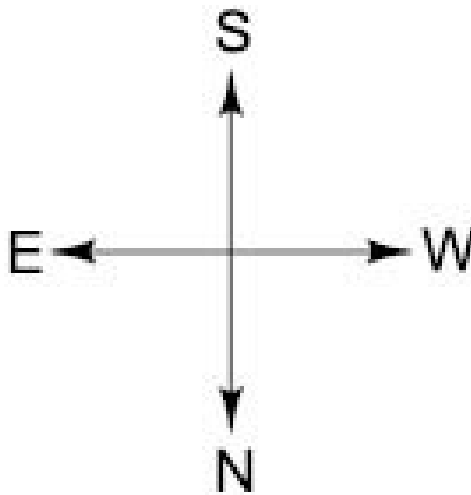


Aman starts walking towards Saman diagonally. After walking half the diagonal he turns to his left. What direction is Aman facing now?

- (a) Northwest (b) East
(c) South (d) Southeast

33. If Ram is in the West of Shyam and Kareem is in the North of Shyam, in what direction is Kareem with respect to Ram?
- (a) Northeast (b) Southwest
(c) Northwest (d) Southeast

Directions for Questions 34 to 34: Alok starts walking from his school toward his house as shown in the figure here. He starts from the front gate of his school, walks 5 km, turns left, walks 2 km, then turns left again and walks 4 kms, then he turns to his right and walks 3 km and then turns left, walks 1 km and then turns to his left again to walk 4 km and then to his right and walks 10 km and finally turns right, walks 3 km and thus reaches the front gate of his house.



34. If Alok's house is southfacing, in which direction did he start walking?
- (a) West
(b) North
(c) South
(d) None of these
35. Alok's house is in what direction with respect to his school?
- (a) Northwest
(b) Southwest
(c) South
(d) Cannot be determined

Answer Key

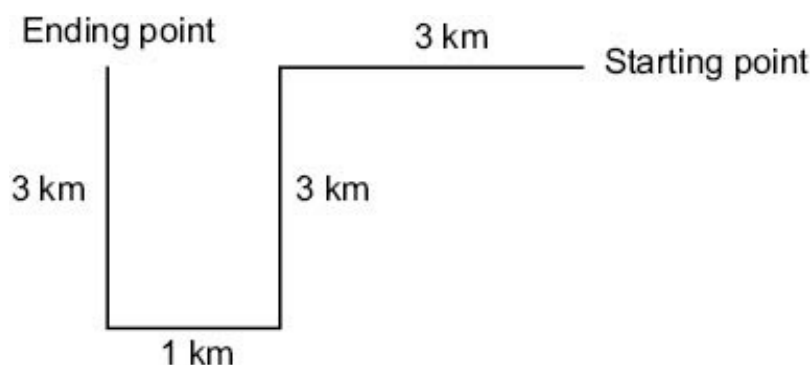
1. (a)	2. (d)	3. (b)	4. (b)
5. (d)	6. (b)	7. (c)	8. (b)
9. (b)	10. (b)	11. (a)	12. (a)
13. (c)	14. (c)	15. (a)	16. (d)
17. (d)	18. (b)	19. (b)	20. (b)

21. (d)	22. (c)	23. (c)	24. (a)
25. (c)	26. (a)	27. (b)	28. (a)
29. (d)	30. (c)	31. (c)	32. (d)
33. (a)	34. (d)	35. (d)	

Solutions

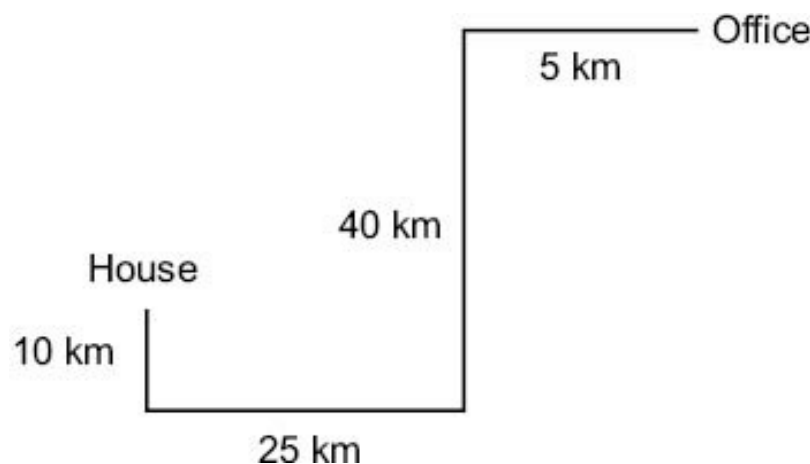
1. If minute hand is pointing towards west, there will be a difference of 45 degrees in the minute hand and the hour hand at 4:30. And that difference would be in the anticlockwise direction. So, southwest. Option (a) is correct.

2.



From the figure it is evident that the distance is 4 kms. Option (d) is correct.

3.

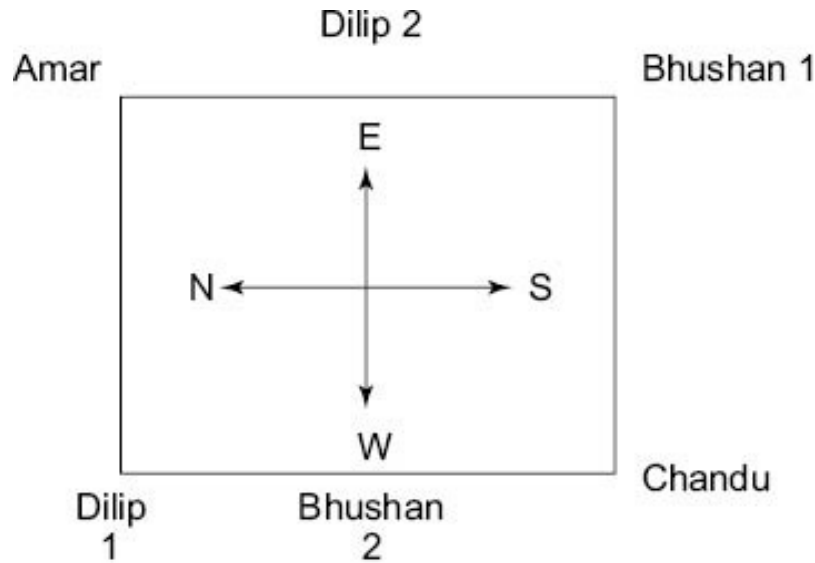


The journey would be as per the figure. Her office would be northeast from her house. Option (b) is correct.

4. The distance $d^2 = 30^2 + 30^2 = 1800$. $d = 30\sqrt{2}$. Option (b) is correct.
5. To get to the answer we must assume Amar to be at the point of dissection of the two direction lines. After walking half the distance, Amar will reach the mid of the diagonal, then turn right and face northwest and after that would face the southwest direction when he turns left. (Note that the directions in the figure are different from the usual north, south, east, west directions as the north is in the east position.) Option (d) is correct.
6. Amar would be at Dilip's position, Chandu would be at Bhushan's position, Bhushan would

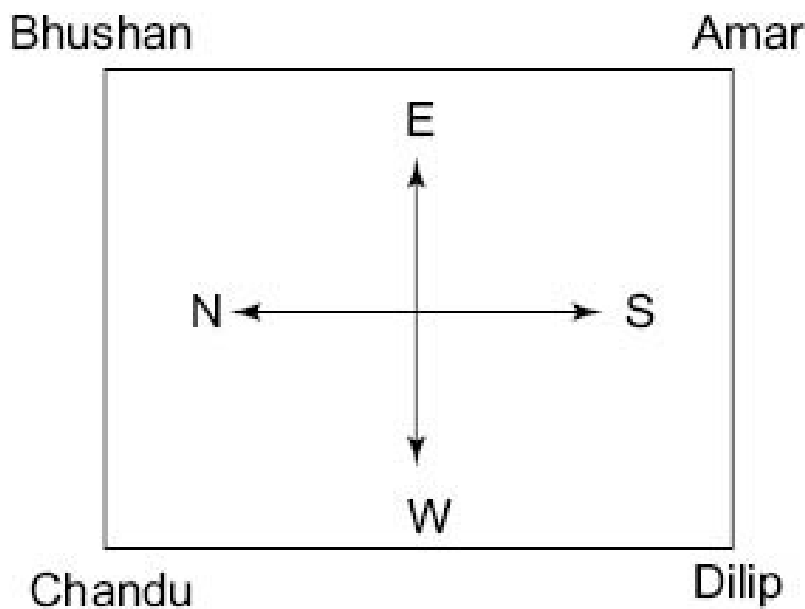
be at Chandu's position and Dilip would be at Amar's position. Thus, the final positioning would be Dilip-Chandu- Bhushan-Amar. DCBA (Option b) is correct.

7. The final positions would be:



Option (c) can be seen to be correct.

8. Amar would reach Bhushan's original position as seen in the figure for the final positions. He would be at the southeast corner.



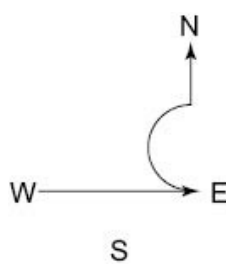
Option (b) is correct.

9. Chandu would be at the northwest corner from the solution figure to the previous question.
 10. It can be inferred from the figure below that H is the farthest south and C is the farthest east.



Option (b) is correct.

- 11.



From the given figure it is clear that the river would be flowing north.

Option (a) is correct.

Solutions to Questions 12 to 14: The following figure represents the positioning of the nine huts:



The answers are:

12. a

13. c

14. c

Solutions to Questions 15 to 19

The vertical North South streets are N, O, P, Q, R. From the basic information we have two relative positions are available—one between O, P and N and the other between Q and R.

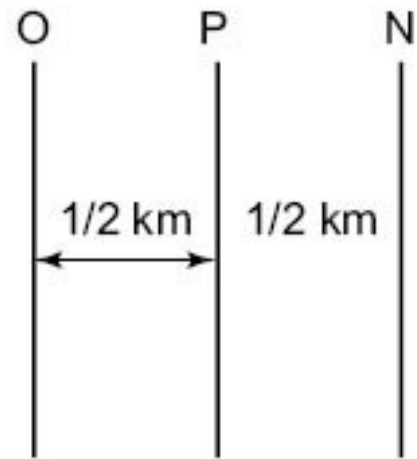


Figure for O, P and N

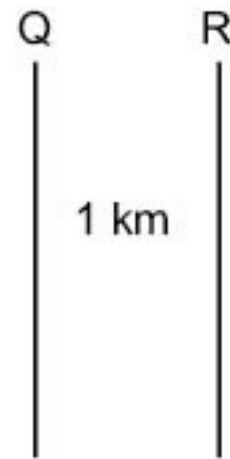
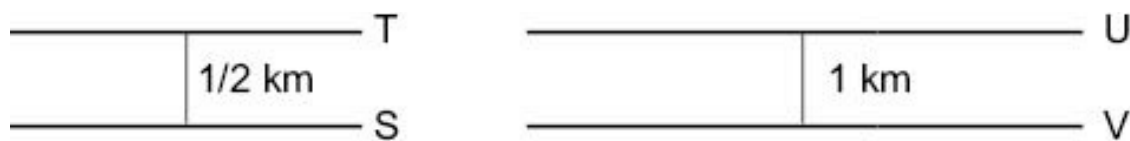


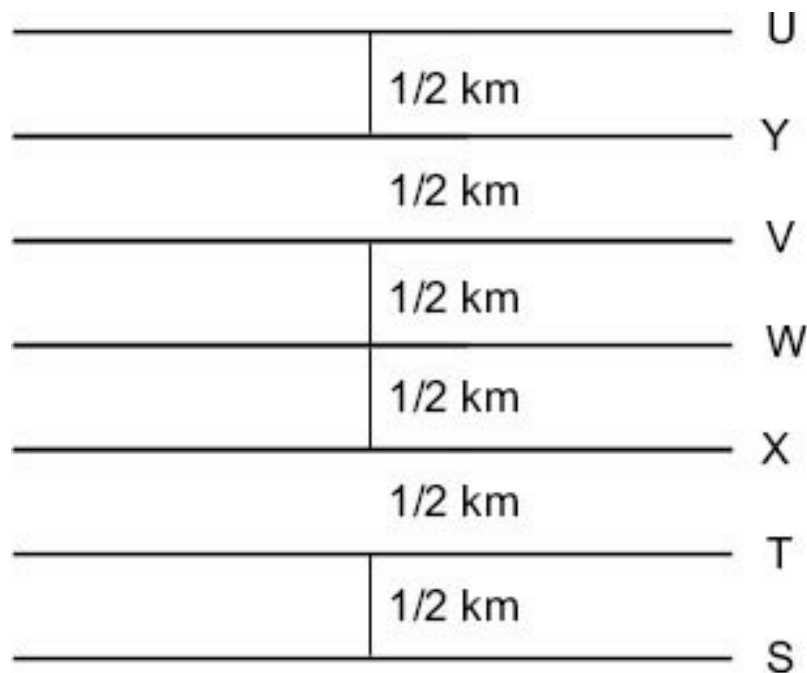
Figure for Q and R

The horizontal eastwest streets are: S, T, U, V, W, X, Y.

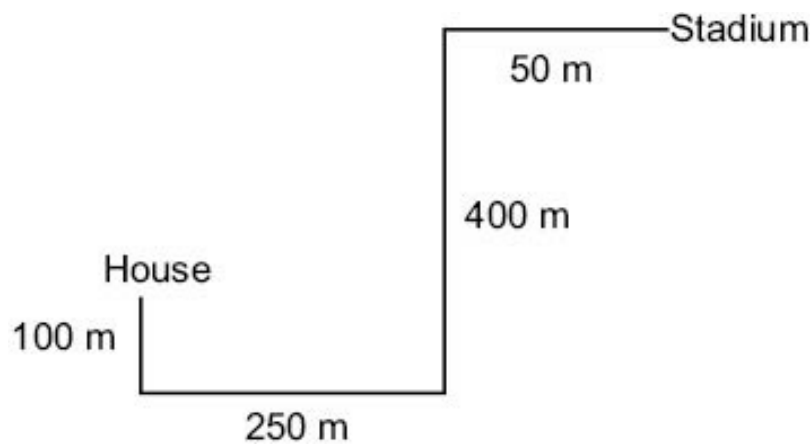
Of these seven streets the relative positioning is given in 3 distinct parts as shown here.



15. The solution is visible from the figure below. Option (a) is correct.



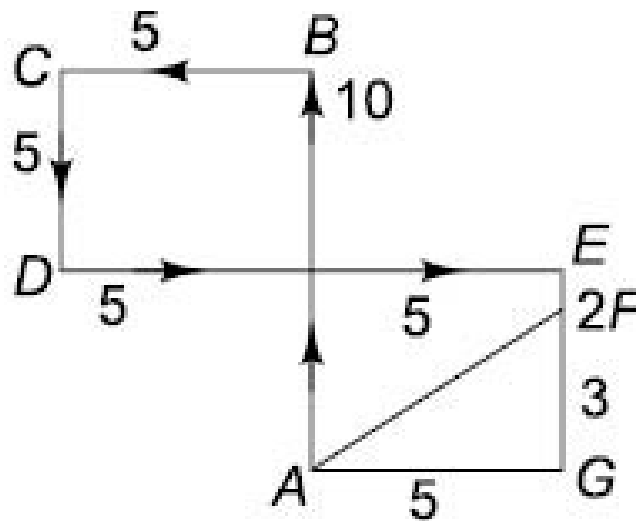
16. If R is 1/2 km east of O, then R and P would coincide. Option (d) makes two streets coincide.
17. If R is placed between O and P, Q to N would be a minimum of 1.5 and a maximum of 2 kms
Option (d) is correct.
18. If R is between O and P, then Q being 1 km to the west of R, would be more than 1 km to the west of P. Option (b) is correct.
19. Y is 1.5 km north of X is correct in all cases as the figure between X, W and Y shows. Option (d) is correct.
- 20.



The stadium is northeast with respect to the house. Option (b) is correct.

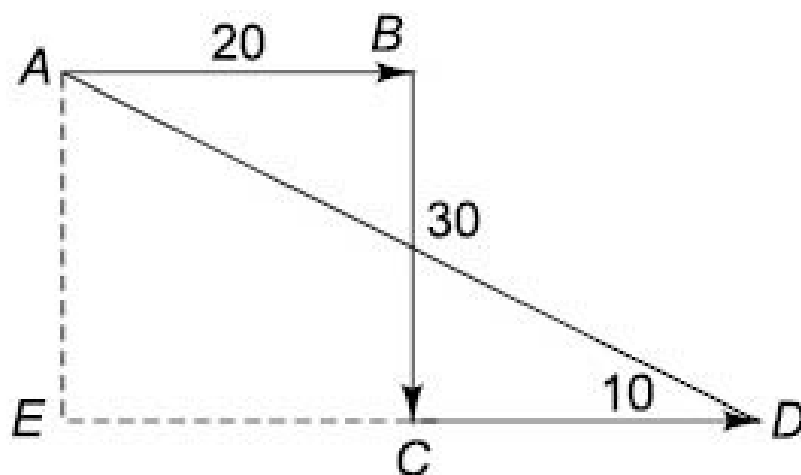
21. Since her house faces towards the south, when she starts from the back side of her house she would go 50 metres north. After this when she turns left, she would be going west and when she again turns right she would be facing the north again. Hence, Option (d) is the correct answer.

22.



From the figure, he starts at A goes through B C D E F and his final distance from A is given by the distance $A = \sqrt{(5)^2 + (3)^2} = \sqrt{34}$. Hence, Option (c) is the correct answer.

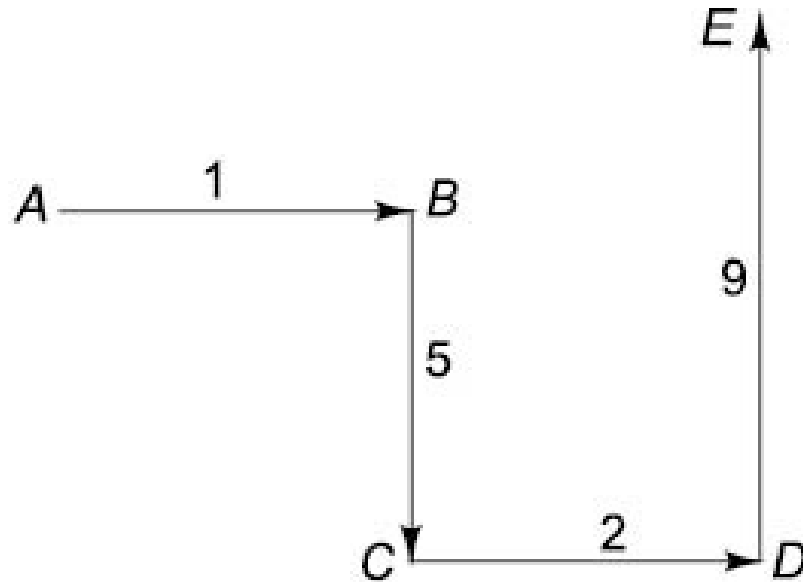
23.



Distance $AD = \sqrt{1800} = 30\sqrt{2}$

Hence, Option (c) is the correct answer.

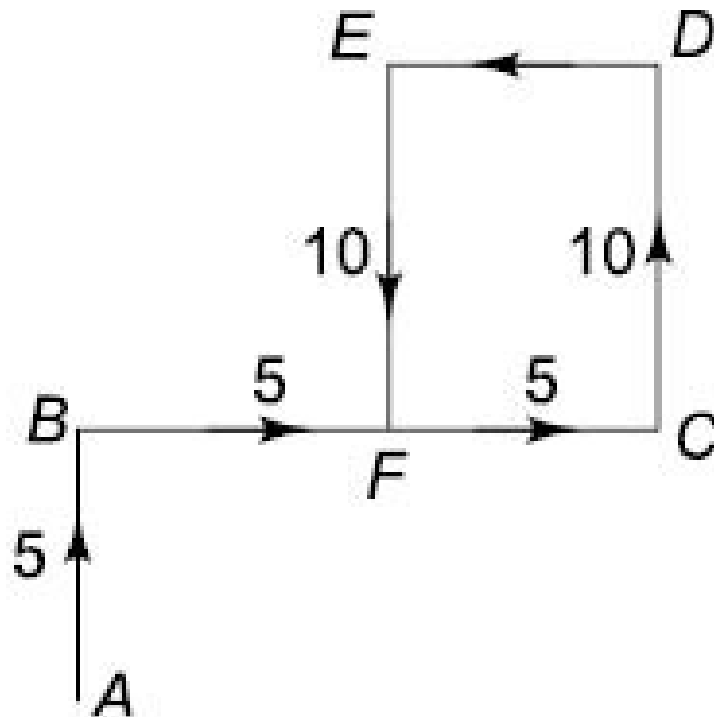
24.



$d(AE) = \sqrt{3^2 + 4^2} = 5 \text{ km}$

Hence, Option (a) is the correct answer.

25.

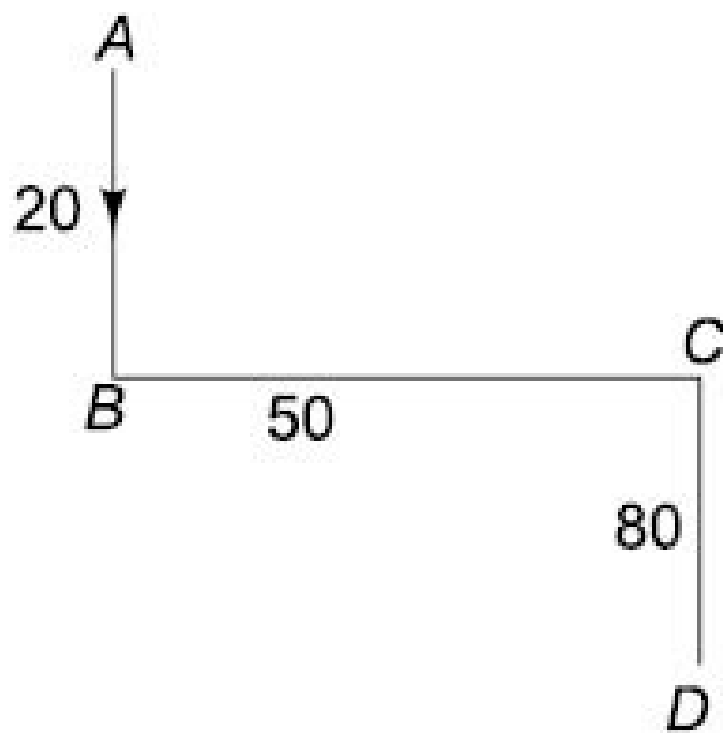


If A is the starting point:

The required distance is seen on $AF = \sqrt{50} = 5\sqrt{2}$.

Hence, Option (c) is the correct answer.

26.

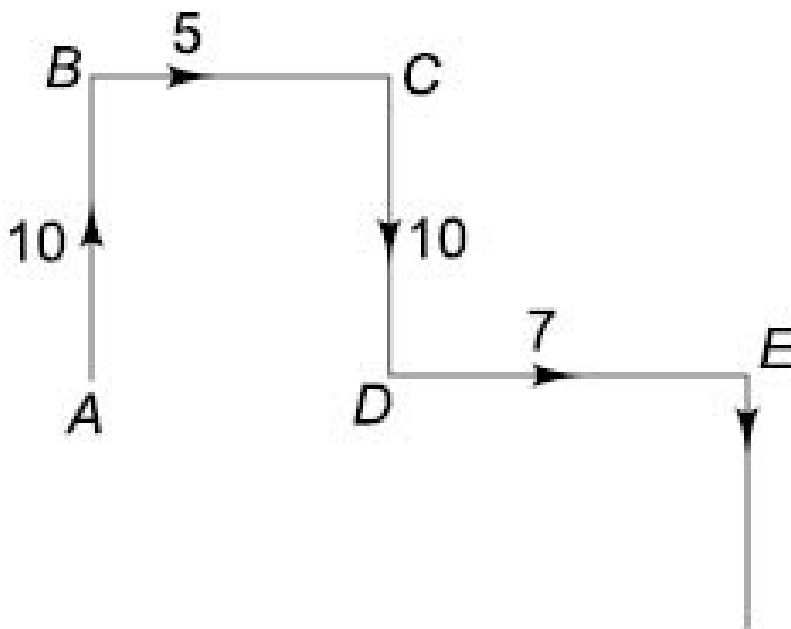


$$d/AD = \sqrt{50^2 + 100^2}$$

$$\sqrt{12500} = 50\sqrt{5} \text{ metres}$$

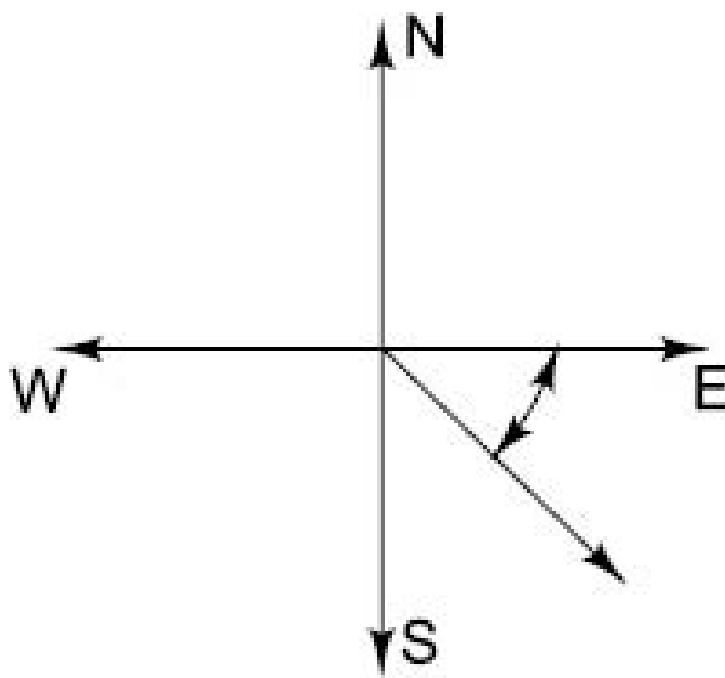
Hence, Option (a) is the correct answer.

27.



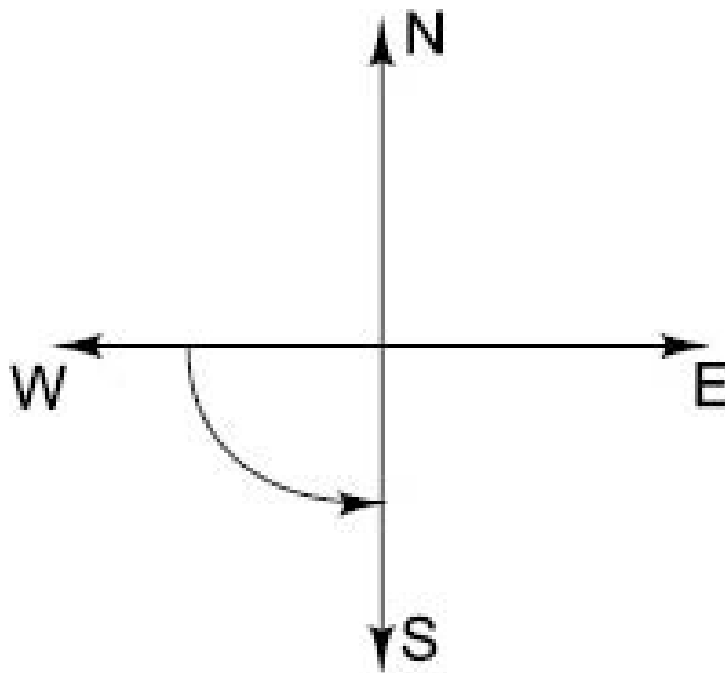
Starting from *A* he would be at *E* and facing South. Hence, Option (b) is the correct answer.

28.



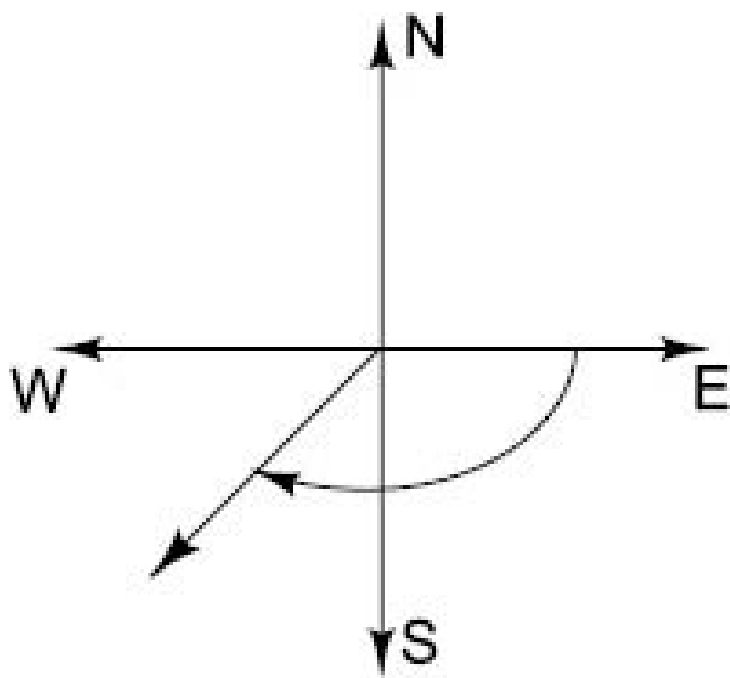
From this figure it is clear that there has to be a 45° counter clockwise rotation. Hence, North would become northwest. Hence, Option (a) is the correct answer.

29. Similar to the above question it would be southwest. Hence, Option (d) is the correct answer.
 30.



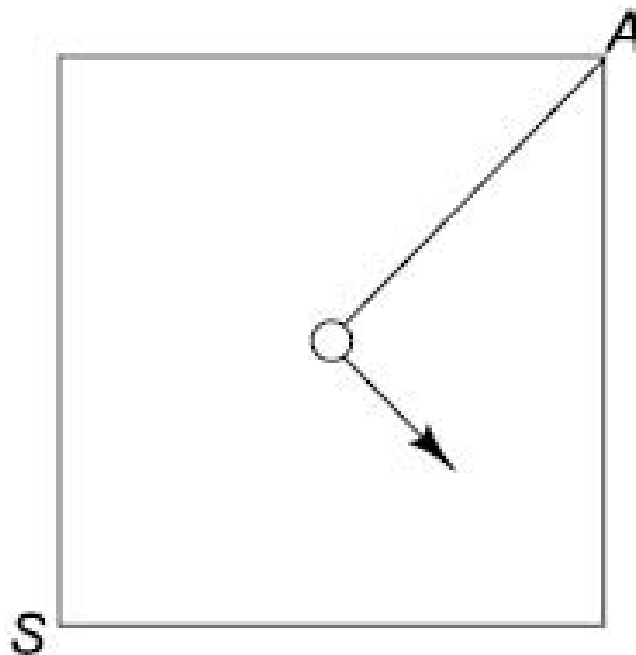
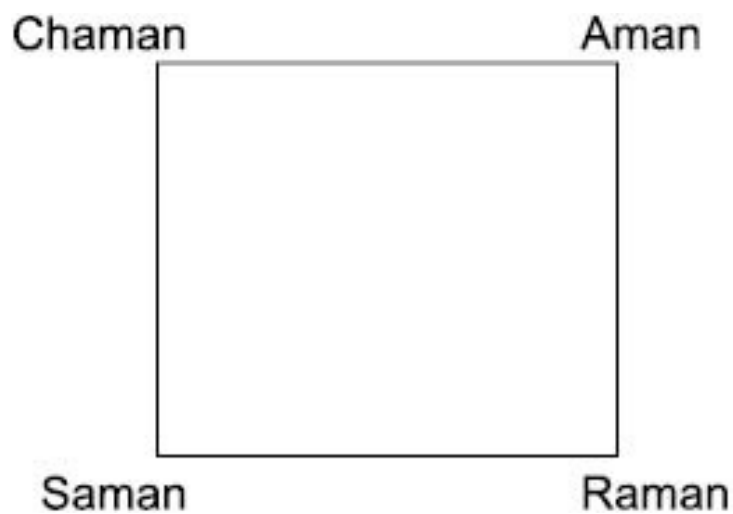
There is a 90° counter clockwise shift. If the person follows the east pointer, he would actually be going North. Hence, Option (c) is the correct answer.

- 31.



Since east is showing southwest, south would be going northwest (135° clockwise rotation). Hence, Option (c) is the correct answer.

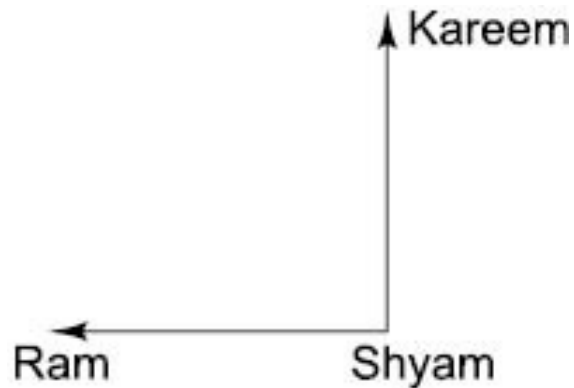
32.



He would be facing southeast.

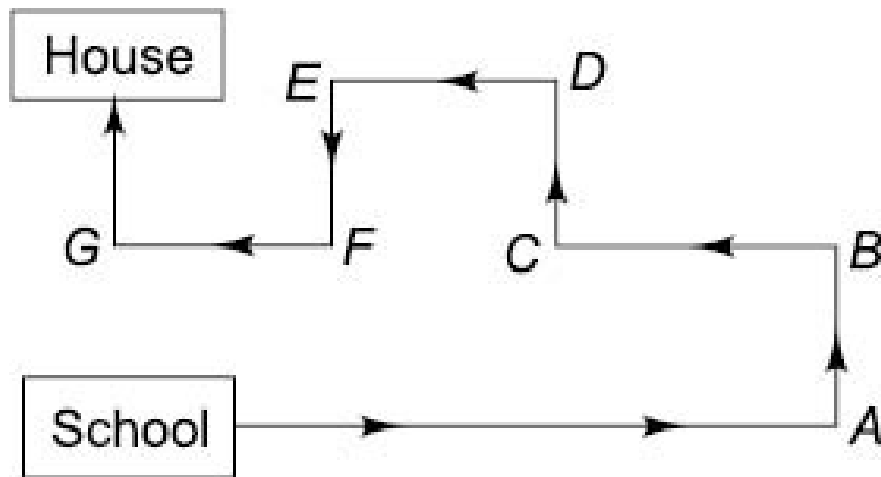
Hence, Option (d) is the correct answer.

33.



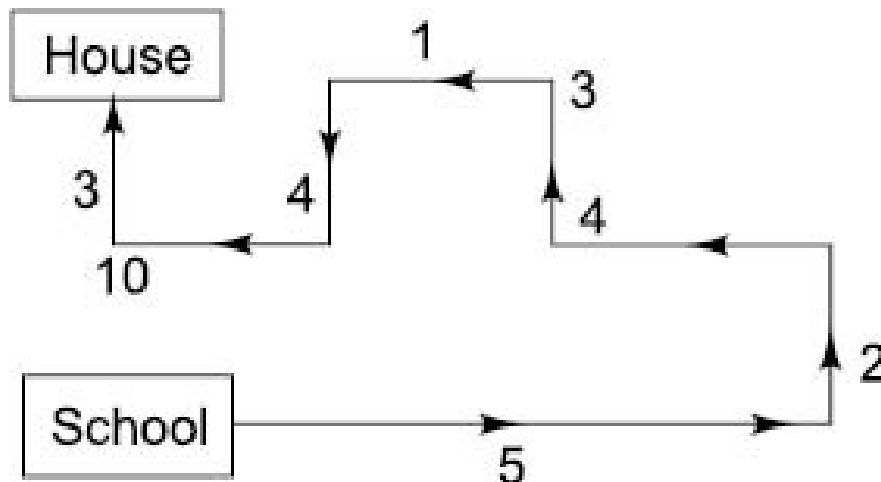
He will be northeast. Hence, Option (a) is the correct answer.

34.

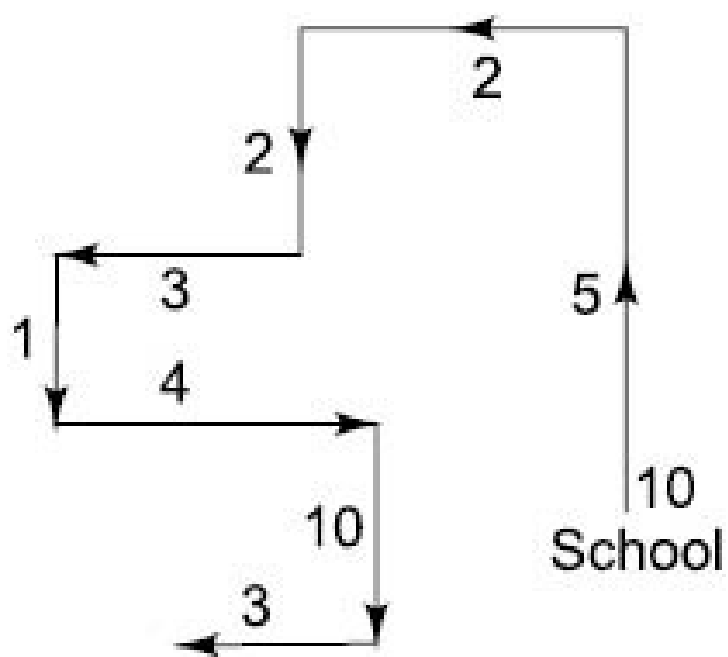


We need to just work out the direction for this question. Since Alok's house is south facing, the above figure will describe his journey correctly. Hence, the school faces east. Hence, Option (d) is the correct answer.

35.



According to this figure the house is northwest.



According to this figure the house is southwest.

Since we do not know the starting direction, we cannot determine the answer. Hence, Option (d) is the correct answer.

Statement and Conclusions

Conclusions are inferences that can be drawn on the basis of the information contained in a paragraph/statement. A conclusion in other words is also an inference that follows the given information. Drawing conclusions is something we all do regularly. The main difference between a conclusion which we saw in the last chapter and an assumption is that while an assumption precedes the information, a conclusion follows it.

The following solved examples will help you better understand conclusions:

Directions: In each of the following questions, a statement is given followed by two conclusions. Give answer

- (a) If only conclusion I follows.
- (b) If only conclusion II follows.
- (c) If both conclusions I and II follow.
- (d) If neither I nor II follows.

Example 1

Statement

Ahmedabad has a lower population and hence is a safer place to live.

Conclusions

- I. A city which has less population is a better place to live.
- II. Ahmedabad has lower number of crimes than Bombay.

Solution

Both the conclusions do not follow. The first conclusion statement is in fact an assumption on which the argument statement is based. It is not a conclusion which can be derived from the statement. Similarly, we have no information about crime rates in Bombay in the statement and hence conclusion II also does not follow. Hence, option (d) is correct.

Example 2

Statement

All students of my class have a bright chance in their examination.

Conclusions

- I. I teach them the whole syllabus thoroughly.
- II. All the students are intelligent.

Solution

A teacher can claim that his students have a bright chance in the examination only if he teaches the syllabus thoroughly. However this is an assumption that must be valid for the statement to be made (and is not a conclusion). Hence conclusion I is valid. Conclusion II is also invalid because the 'students' who are being referred to are not defined clearly. Hence, option (d) is correct.

Example 3

Statement

Anyone who manages an engineering organisation like Tata Motors can only be successful if he has the knowledge of the professional work that is carried on in the organisation.

Conclusions

- I. If you want to run any company, it is essential that you should know the professional work associated with it.
- II. In order to manage an engineering organisation like Tata Motors, it is essential to have an engineering education background.

Solution

The statement particularly talks about engineering organisations like Tata Motors. The first conclusion is generalising the statement and is hence not valid as a conclusion. The second conclusion follows. Hence option (b) is correct.

Example 4

Statement

According to Baba Ramdev "Values, integrity and peace of mind are essential for a beautiful life."

Conclusions

- I. Baba Ramdev believes that each of values, integrity and peace of mind are essential for a beautiful life.
- II. Baba Ramdev believes that materialistic persons can not have a beautiful life.

Solution

Conclusion I follows since that is what is meant by the statement. Materialism is generally anti values and integrity and hence we can draw the second conclusion. Hence option (c) is correct.

Example 5

Statement

India won the second test match against Pakistan by one innings and two hundred and three runs. The greatest contribution was from the bowlers.

Conclusions

- I. Most of the Indian players are bowlers.
- II. It was India's biggest win against Pakistan.

Solution

Both conclusions are invalid. Hence, option (d) is correct.

EXERCISE

Directions for Questions 1 to 16: In the following questions there is a statement followed by two conclusions. You have to choose:

- (a) If only conclusion I follows.
- (b) If only conclusion II follows.
- (c) If conclusions I and II both follow.
- (d) If neither I nor II follows.

1. **Statement** A degree in law is one of the most wanted degrees by youth in India.

Conclusions I. A degree in law guarantees a good profession.

II. A degree in law is the first choice for youth in India.

2. **Statement** Protinex is beneficial for a muscular body.

Conclusions I. All athletes take Protinex.

II. We should take Protinex for muscular body.

3. **Statement** Most students of the LU BMS program are bright.

Conclusions I. Many companies visit the LU BMS program for campus placements.

II. Some of the students of LU BMS are not bright.

4. **Statement** India is the largest exporter of Lichi.

Conclusions I. India only exports Lichi.

II. China and Japan are the most important customers of Lichi from India.

5. **Statement** SRK is a famous filmstar. SRK earns handsome amounts every year through advertisements of products he endorses.

Conclusions I. All famous filmstars earn handsome amount through advertisements.

II. SRK, being famous, endorses only famous brands.

6. **Statement** Reputed management institutes focus on both quality and advertisement.

Conclusions I. There are only two important factors for a reputed management institute: quality and advertising.

II. Small management institutes focus on only one of quality and advertising.

7. **Statement** The Australian Cricket team scored 300 runs out of which Andrew Symonds scored 151 runs.

- Conclusions** I. Andrew Symonds was the highest run scorer of the match.
II. Symonds scored 66 runs in singles only.
8. **Statement** Due to the onset of monsoon there is a sharp hike in the price of alphonso mangoes.
- Conclusions** I. Alphonso mangoes are in demand at any price.
II. The onset of monsoons affects the market for alphonso mangoes.
9. **Statement** What is an RDX explosive? From the outside it looks like a simple harmless object, but its real contents are so deadly that they are sufficient to blast off an entire compartment of a train or even a plane.
- Conclusions** I. The RDX explosive can cause massive destruction by killing a number of persons with a single explosion.
II. The RDX explosive is only used to blast planes/trains as it is difficult to recognise in such settings.
10. **Statement** Don't park here. If you violate this no-parking sign, a penalty of Rs 5000 will be charged.
- Conclusions** I. The same penalty is charged for every wrong parking offence.
II. This warning is written outside all non-parking zones.
11. **Statement** Whenever there is a match between India and Pakistan, Mr. Sahai takes leave from his office. Mr. Sahai is in office today.
- Conclusions** I. Today there is no match between India and Pakistan.
II. Mr. Sharma always goes to his office except on India–Pakistan match days.
12. **Statement** All the male members of my family are either software engineers or MBAs.
- Conclusions** I. Mrs. Meena is a member of my family. She is either a software engineer or an MBA.
II. Mr. Prakash is a member of my family. He is either a software engineer or an MBA.
13. **Statement** All politicians are honest. Radha Devi is an honest lady.
- Conclusions** I. She is a politician.
II. She is not interested in politics.
14. **Statement** If the temperature remains constant the wind speeds will be below 100 kmph. Wind speeds were above 100 kmph.
- Conclusions** I. Temperature was not constant.
II. Temperature was fluctuating.
15. **Statement** Without abundant rains, there will be a decline in the water level beneath the earth. This year, the rains were deficient.

- Conclusions** I. The water level must have declined.
II. Millions of people were in trouble because of shortage of water.

16. **Statement** Any student who is caught red-handed using unfair means discredits his parents and teachers.

- Conclusions** I. Such students try to show that their teachers don't teach properly in the class.
II. Stringent actions must be taken against such students.

Directions for Questions 17 to 20: Choose the correct conclusion for the given statement/s.

17. **Statement** Laughter is the best medicine.

- Conclusions** (a) All medicines have Benzene enzymes.
(b) Laughter is good for health.
(c) All medicines that make you laugh are good.
(d) Stand up comedy shows on television are a good source of laughter.

18. **Statement** 1. Private companies employees work for five working days with 9 working hours every day.
2. IOC's employees work for 6 working days a week and 8 working hours a day.

- Conclusions** (a) IOC's employees are better than private companies employees.
(b) IOC's employees work more than Private companies employees.
(c) Private companies employees work more than IOC's employees.
(d) IOC's employees are more efficient than that of private companies.

19. **Statement** 1. All athletes in the Asian athletics teams are talented.
2. All Indian athletes are now in the Asian athletics team.

- Conclusions** (a) Some Indian athletes are talented.
(b) All Indian athletes are talented.
(c) India does not have any athletics team.
(d) India has more cricketers than athletes.

20. **Statement** 1. Next year, salary of all people working in the Bata Hindicom will increase by Rs 1 lac per year.
2. The current income difference between two employees of Bata Hindicom, Arun and Subhash is Rs 2 lacs.

- Conclusions** (a) Arun's salary will be higher after the increment in salary.
(b) Subhash's salary will be higher than Arun's from the next year.
(c) The difference between Arun and Subhash's salary will remain constant.
(d) None conclusion follows.

Directions for Questions 21 to 25: In the following questions there are given some statements followed by conclusions that can be drawn from them. Choose the answer for each question independently.

21. Bombay is more expensive than Delhi. Delhi is more expensive than Calcutta. Bombay is more expensive than Calcutta.

- (a) true (b) probably true
(c) false (d) can't say

22. Basket ball players are generally tall. Jeevan is a basketball player. So Jeevan is tall.

- (a) false (b) probably false
(c) true (d) can't say

23. **Statement** 1. Some actors are dancers.
2. All those, who are dancers, are paid well.

Conclusions Some actors are paid well.

- (a) true (b) probably true
(c) false (d) can't say

24. **Statement** Teachers punish students when they do not complete their homework. Ravi (a teacher) punished Soni in school today.

Conclusions Soni did not do her homework.

- (a) definitely true
(b) definitely false
(c) can't say
(d) conclusion is irrelevant

25. **Statement** Smart managers are those who hire smart employees.

Conclusions To be a smart manager, I just have to hire smart employees.

- (a) true
(b) false
(c) either probably true or probably false
(d) can't say

Answer Key

1. (d)	2. (b)	3. (b)	4. (d)
5. (d)	6. (d)	7. (d)	8. (b)
9. (a)	10. (d)	11. (a)	12. (b)

13. (d)	14. (c)	15. (d)	16. (b)
17. (b)	18. (b)	19. (b)	20. (c)
21. (a)	22. (d)	23. (a)	24. (c)
25. (d)			
-

Solutions

1. The first conclusion is not necessarily true. Similarly we cannot comment definitely about the first choice of youth. Hence, option (d) is correct as neither conclusion follows.
2. The second conclusion is what is hinted at by the statement. Hence, option (b) is correct.
3. Conclusion II follows. Hence, option (b) is correct.
4. Neither conclusion can be drawn from the statement. Hence, option (d) is correct.
5. Neither conclusion can be drawn from the statement. Hence, option (d) is correct.
6. We cannot say that there are only 2 important factors for reputed management institutes as there could be more factors present too. Similarly, we cannot draw any conclusion about small management institutes. Thus, neither conclusion can be drawn from the statement. Hence, option (d) is correct.
7. Neither conclusion can be drawn. Hence, option (d) is correct.
8. Conclusion I is irrelevant to the argument while conclusion II follows. Hence, option (b) is correct.
9. Only the first conclusion can be drawn. It is clear from the statement that the RDX explosive can cause massive destruction and can kill a number of persons with one explosion. The second conclusion cannot be drawn since we have no indication to conclude that RDX is used only to blast planes or trains. Hence, option (a) is correct.
10. Neither conclusion is valid. Hence, option (d) is correct.
11. Conclusion I follows while the second one does not. Hence, option (a) is correct.
12. Conclusion II can be drawn. Hence, option (b) is correct.
13. Just because all politicians are honest and Radha Devi is also honest does not mean that Radha Devi is a politician—she might not be a politician and still be honest. Conclusion I would have followed if it had been mentioned that only politicians are honest. Similarly, we cannot draw any conclusion about her interest in politics. Hence, option (d) is correct.
14. Both the conclusions are correct. Hence, option (c) is correct.
15. We cannot conclude either conclusion I or conclusion II since we cannot comment on the decline of water level we do not know whether water level declines immediately if the rains are deficient. Thus just because the rains were deficient in this year we cannot conclude that the water level must have already fallen—for all you know it could fall later. Similarly, conclusion II is not valid because we do not know anything about the trouble-deficient rain causes to millions of people. Hence, option (d) is correct.

16. Conclusion II follows while the first one does not—we cannot be certain that such students are trying to show that their teachers do not teach properly. Hence, option (b) is correct.
17. A medicine is something that is beneficial for health. Hence, we can conclude that conclusion (b) follows from the statement. Options (a), (c) and (d) are irrelevant conclusions.
18. Options (a) and (d) do not follow as we do not know anything about who is better. From the two statements it is easy to conclude that IOC's employees work more than Private company employees. Hence, option (b) is correct.
19. Obviously conclusion (b) follows.
20. Obviously conclusion (c) is correct. We cannot say anything about whose salary is higher.
21. Clearly the conclusion holds true. Hence, option (a) is correct.
22. Clearly we cannot claim that every basket ball player is tall. However, we cannot also say for sure that Jeevan is not tall. Hence, option (d) is correct.
23. Definitely true. Option (a) is correct.
24. From the given statement it is not clear as to why Ravi punished Soni. While her not doing her homework could have been a reason it could equally well not have been the reason too. Hence, we cannot say anything about this. Option (c) is correct.
25. We cannot say for sure whether this conclusion is true or false. It might be true and at the same time might be false if there are more things that are needed to be done for being a smart manager. Hence, option (d) is correct.

Statement and Assumptions

Whenever we say something (in any conversation) there are certain assumptions which must be true for the statement to make sense. In other words an assumption is something that is ‘taken for granted’ in the context of a statement.

Most questions on Statement and Assumptions give you a statement and follow it up with two further statements which have to be tested for whether they are implied in the original statement or not. In order to identify whether an assumption is implied in a statement the best way to do so is to look at the original statement in the question by negating the assumption which is being tested. In case the assumption being tested is implied, negating it will have the effect of weakening the argument of the original statement.

Directions: In each question below is given a statement followed by two assumptions numbered I and II. Consider the statement and decide which of the given assumption is implicit.

Given answer

- (a) If only assumption I is implicit.
- (b) If only assumption II is implicit.
- (c) If both I and II are implicit.
- (d) If neither I nor II is implicit.

Example 1

Statement

Strong programming skills cannot be the only criteria for a successful career in the field of Information Technology.

Assumptions

- I. Bright careers in Information Technology are not linked only with strong programming skills.
- II. If a person has excellent communication skills as well as strong programming skills, only then would he be successful.

Solution

Clearly, there should be some other skills such as interpersonal skills, communication skills, negotiation skill, etc., for a successful career. Hence, assumption I is implicit. Assumption II is not implicit because it talks only about communication and technical skills. Hence option (a) is correct.

Note: Try the negation test in this question. If Assumption 1 is not true, i.e. “Bright careers in Information Technology are not linked only with strong programming skills” is untrue, then the argument contained in the statement “Strong programming skills cannot be the only criteria for a successful career in the field of Information Technology” loses its strength. Hence, this assumption is implicit in the statement.

Example 2

Statement

The maximum IAS exam selection will be from our institute—A director of a coaching institution.

Assumptions

- I. Most of the students who study in this institute are genius.
- II. Teachers of the coaching institution are preparing their students thoroughly.

Solution

Assumption I is irrelevant because there might be some other genius students who are studying in other coaching institutions. Assumption II is implicit.

A coaching institution can only claim such statements if it is preparing its students thoroughly. Hence, option (b) is correct.

Example 3

Statement

Over a cricketing career most players would do well to remember that there is only one thing that overcomes hard luck—hard work.

Assumptions

- I. If a cricketer is hardworking, he/she can easily tackle the toughest phases of his cricketing career.
- II. A cricketer writes his/her own destiny by hard work.

Solution

Both the statements are implicit. All cricket players face difficult times in their careers, but only those succeed, who confront these phases bravely and work hard to overcome them. In this way, hard luck becomes insignificant for a cricketer. Hence, option (c) is correct.

Example 4

Statement

The case of Marion Jones clearly indicates that if taking drugs play a vital role in the performance of athletes, there is absolutely no use of spending time to watch the athletics in the Olympics.

Assumptions

- I. Cricketers, hockey players and footballers are not involved in doping. So we can spend time to watch such games.
- II. Asian athletes do not win medals because they refrain from taking drugs.

Solution

Both the assumptions are irrelevant. In the statement nothing is said about other games and as such negating that assumption has no effect on the strength of the argument in the statement. Besides, the performance of Asian athletes is irrelevant to the argument. Hence, option (d) is correct.

Example 5

Statement

A Reliance Fresh Retail store was attacked by vegetable vendors in Ranchi.

Assumptions

- I. Reliance Fresh has affected the livelihood of local vegetable vendors.
- II. Reliance Fresh stores are built in thickly populated areas.

Solution

Assumption I is implicit because somewhere down the line, Reliance Fresh is affecting the local vendors. That is why they have been violent. Assumption II is irrelevant because nothing is mentioned regarding the location of the stores. Hence, option (a) is correct.

EXERCISE

Directions:

- (a) If only assumption I is implicit.
- (b) If only assumption II is implicit.
- (c) If both I and II are implicit.
- (d) If neither I nor II is implicit.

1. **Statement** UPSC is tougher than MPPSC. So I will appear in MPPSC.

Assumptions I. Every graduate should appear in MPPSC.

- II. One should avoid tougher things because one might fail in them and failure might lead to a loss of time. On the other hand if something is easy the chances of succeeding are high.

2. **Statement** Rahim is a tall boy

Assumptions I. Rahim's father's height is 6 feet 7 inches.

- II. Any height above 6 feet is considered to be tall.

3. **Statement** What is the distance of my home from my office?

Assumptions I. My home is at the centre of the city.

- II. My office is 10 km away from the park, which is 1 km away from my home.

4. **Statement** A says to B "Refer to the Cambridge dictionary instead of the Oxford dictionary to be good at English."

Assumptions I. B wants to be good at English.

- II. A is a good advisor.

5. **Statement** Narayan the CEO of the company says to his employee, “Achieve the targets we have set for you or I will fire you.”
- Assumptions** I. With Narayan’s statement, the employee will work hard to achieve his targets.
- II. All bosses are in the habit of intimidating their employees.
6. **Statement** In the last year, Lucknow University has launched a number of management courses for the better future of its students.
- Assumptions** I. These courses may attract students.
- II. Lucknow University is conscious about the future of students.
7. **Statement** “We should take permission from the director of the college in order to organise the annual fest.” One student to another.
- Assumptions** I. Without the director’s permission we can’t organise the annual fest.
- II. The director does not want to celebrate annual fests.
8. **Statement** “If you want to specialise in Human Resource Management in India, join XLRI.”
- Assumptions** I. XLRI provides specialisation in HRM.
- II. XLRI has the best HRM course in India.
9. **Statement** Most rural folks are uneducated and therefore superstitious.
- Assumptions** I. Education increases rational thinking.
- II. Rural folks don’t go to school.
10. **Statement** Since the exam is held on the third Sunday of November it is going to be held on 18th November this year.
- Assumptions** I. This year it will not be held on 15th, 19th, 20th or 21st of November.
- II. This year it will not be held on 16th or 17th November.
11. **Statement** “See it first only on our channel”, an advertisement of a news channel.
- Assumptions** I. Advertising is the first and most important thing for every channel.
- II. Other news channels do not want to show things first.
12. **Statement** To keep my knowledge about world affairs strong I always read *The Economist* magazine.
- Assumptions** I. There is no other magazine except *The Economist* for world affairs.
- II. *The Economist* is a cheap magazine.
13. **Statement** The present condition of law and order is the worst of all time.
- Assumptions** I. The present government does not pay heed to the requirements of maintaining law and order.

II. In earlier days, the law and order condition was better.

14. **Statement** India's contribution to the growing global market of management consultancy may touch \$5 billion by 2030, which is 10 per cent of the current export size.

Assumptions I. The current export size is \$50 billion.

II. The current year is 2010.

15. **Statement** A Harvard University study raises fresh concerns about the anti-allergy drug Crocin which is prescribed to patients following antibiotic medication. Compared with other two anti-allergy drugs (one of the three must be prescribed), this study shows that Crocin significantly raises the risk of adverse side effects following antibiotic medication.

Assumptions I. There is no risk if one of the two other anti-allergy drugs are administered.

II. It is necessary to take an anti-allergy drug after antibiotic medication.

16. **Statement** Children whose mothers eat more Frito Lays during pregnancy have higher motor skills and more athletic capability than those whose mothers eat little, according to a new British study.

Assumptions I. Those whose mothers don't eat Frito Lays have zero motor skills and athletic capability.

II. It is essential for pregnant women to have Frito Lays in order to have children with higher motor skills and more athletic capability.

17. **Statement** Many students were caught red-handed and rusticated while using unfair means during the recent university examinations.

Assumptions I. The University authorities have never taken such strong actions earlier.

II. The examination administration committee had prior knowledge about this issue.

18. **Statement** The parents of majority of the students of IIM Ahmedabad have decided to withdraw their wards from the institute to protest against the sharp fee hike.

Assumptions I. It is likely that such attempts will make the IIM Ahmedabad authority to rethink the sharp fee hike.

II. The institution will be closed after 10th of June.

19. **Statement** In the absence of Ravi, Sunil will be teaching mathematics in AMS.

Assumptions I. AMS has only two teachers of mathematics.

II. Ravi is better than Sunil.

20. **Statement** It is clear from the past records of the gym that most people who exercise at the gym regularly maintain the perfect correlation between height and weight.

Assumptions I. Exercise at the gym is essential for everyone.

II. If one wants to have weight according to his height, he should exercise at the

gym regularly.

21. **Statement** “Please switch off your mobile phones while you are in class”, a notice outside a classroom in XYZ.

Assumptions I. Every student of XYZ keeps mobile phones.

II. Switched on mobile phones might distract the atmosphere of the class.

22. **Statement** If you have the desire to excel, we have a job for you.

Assumptions I. If you don’t have a desire to excel, you will not get a job with us.

II. Every job requires the desire to excel.

23. **Statement** “Please submit your fee well before 10th February”, A notice at a coaching institution.

Assumptions I. Unless they are instructed through a notice, a number of students will not submit their fee.

II. The institute will be closed after 10th of August.

24. **Statement** The telephone department has started going home to home to collect bills.

Assumptions I. A substantial number of customers fail to pay their bills in the telephone department.

II. There has been a high default rate in the case of telephone bill payments.

25. **Statement** Use Brylcream to look handsome.

Assumptions I. People want to look handsome.

II. Only ugly people will purchase this product.

Answer Key

1. (b)	2. (d)	3. (d)	4. (a)
5. (a)	6. (c)	7. (a)	8. (c)
9. (a)	10. (c)	11. (d)	12. (d)
13. (c)	14. (a)	15. (b)	16. (b)
17. (d)	18. (a)	19. (d)	20. (d)
21. (b)	22. (b)	23. (a)	24. (c)
25. (a)			

Solutions

1. Only Assumption II is relevant here as it justifies the argument in the statement of going for

easier things rather than tougher things.

2. Both assumptions are invalid and not implied. Hence, option (d) is correct.
3. Neither assumptions are valid. Hence, option (d) is correct.
4. This advice will only be given if Assumption I is true. We cannot assume anything about A's advisory skills hence assumption II is not necessary for the statement.
5. Assumption I is implied as the boss would want (and assumes) this reaction from the employee. The second assumption is invalid.
6. Assumption I is an assumption since the University has launched the courses with this intention. Assumption II is also valid since the launching of these courses shows that the Lucknow University is conscious about the future of its students.
7. Assumption I is obvious while Assumption II is something that we know nothing about.
8. Both assumptions are implied.
9. Assumption I supports the basic conclusion that is drawn in the statement and is hence implied but Assumption II is something that we cannot make a judgement about since it is possible to be uneducated even if you have gone to school.
10. Both Assumptions are implied.
11. The first Assumption is irrelevant while the second is also not implied in the statement since we cannot judge about the intentions of every other news channel on the basis of the statement.
12. Neither Assumption is implied.
13. If the present condition is the worst ever, obviously law and order being the responsibility of the government it must be the case that the present government does not pay heed to the requirements of maintaining law and order. Besides, we can also assume that the condition must have been better earlier.
14. We cannot say anything about the current year.
15. Since one of the three must be prescribed, Assumption II must be implied.
16. We cannot assume that those children whose mothers do not eat Frito Lays have zero motor skills and athletic capability. Hence, assumption I is invalid. However, assumption II is valid.
17. Neither assumption is implied.
18. Assumption I is implicit while the second one is irrelevant to the statement.
19. Neither of the two assumptions are implied in the statement.
20. There could be many different ways of maintaining the perfect correlation between height and weight. Neither assumption is valid.
21. Obviously only assumption II is implied in the statement.
22. Assumption I is directly implied in the statement.
23. This notice will only be required if the institute feels that Assumption I is true. The second assumption is irrelevant.
24. Both assumptions are valid since only when I and II are true will the telephone department feel the need to go house to house for bill payments.
25. This assertion assumes that people would want to look handsome, but the second assumption

is not necessary for this assertion.

Assertion and Reason

An Assertion is an affirmation, a declaration or a strong statement. Normally assertions have reasons. In this question type, an assertion is first given followed by a reason. You are supposed to first judge whether the assertion (A) is true and then decide on whether the reason (R) is true and in case both A and R are true then we need to see whether the reason is the correct explanation of the Assertion. The following solved examples will help you get a clearer understanding of this question type.

Directions: For the Assertions (A) and Reasons (R), choose the correct alternative from the following.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.
- (e) If both A and R are false.

1. **Assertion** Crude oil is abundantly found in nature.

Reason It is the main raw material for all automobiles.

Solution Both Assertion and Reason are true but the Reason does not explain the Assertion. Hence, (b) is the answer.

2. **Assertion** Anil Kumble lost his place in the Indian ODI squad sometime back.

Reason In spite of being India's best spinner he was considered to be too old for ODIs.

Solution Both Assertion and Reason are right and the reason correctly explains the assertion. Hence (a) is the right answer.

3. **Assertion** Over the past few decades, there has been drastic global warming.

Reason The push for economic development has increased to dangerous proportions the emission of greenhouse gases into the atmosphere.

Solution Green house gases are the root cause of global warming. Hence both A and R are true and R explains A. Hence, option (a) is correct.

4. **Assertion** Kerala is the largest state in India.

Reason Some of the leading car manufacturing companies of the world are Japanese.

Solution The Assertion is false because Kerala is not the largest state in India. R is true but it is not related to Assertion. Hence, option (d) is correct.

5. **Assertion** The filament inside a bulb is made of copper.

Reason Usually there is vacuum in the bulb.

Solution A is false because a bulb's filament is made of Tungsten and not copper. R is also false because inert gases or nitrogen are filled inside the bulb and there is no vacuum in the bulb. Hence, option (e) is correct.

EXERCISE

Directions: For the Assertion (A) and Reason (R) below, choose the correct alternative from the following.

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

1. **Assertion** In medical parlance with respect to blood groups, a person with a blood group of 'O' is called Universal Donor.

Reason A person with the 'AB' blood group can accept blood of all types, i.e., A, B, AB and O.

2. **Assertion** The Ozone layer present in the upper atmosphere of earth is beneficial for sustaining life on earth.

Reason The Ozone layer blocks the harmful ultraviolet rays from the Sun and thus protects life on earth.

3. **Assertion** Mahatma Gandhi is considered to be the father of the Indian Nation.

Reason The name 'India' was coined by Mahatma Gandhi.

4. **Assertion** Diesel oil is cooking medium.

Reason It is also used in diesel cars.

5. **Assertion** Water is essential for life.

Reason It is formed using three parts of hydrogen and one part of oxygen.

6. **Assertion** The phenomena of nuclear fission generates great energy.

Reason The process in which a nucleus is broken into two parts is called nuclear fission.

7. **Assertion** India is a sovereign country.
Reason Its parliament is based in Delhi.
8. **Assertion** When velocity is kept constant and wavelength is halved, then the frequency is doubled.
Reason $\text{Velocity} = \text{frequency} \times \text{wavelength}$
9. **Assertion** An object immersed in a bottle of water appears larger than it actually is.
Reason It is because of refraction.
10. **Assertion** Four stroke engines are more efficient than two stroke engines as far as fuel consumption is concerned.
Reason Four stroke engines have lower wastage of petrol in their operation.
11. **Assertion** One should not take medicines without a prescription.
Reason Taking medicines without prescription is dangerous because only the doctor knows the actual components in a medicine and the possible side effects due to taking the medicine.
12. **Assertion** Harshad Mehta was responsible for a major bull run in the Indian Stock market.
Reason Harshad Mehta was known as the “big bull”.
13. **Assertion** It has been observed that buffaloes like to remain in the water during the summer.
Reason Contact with water cools the body in the summer.
14. **Assertion** Iron is a good conductor of electricity.
Reason If you touch an iron rod which is exposed to electric current, you will get an electric shock.
15. **Assertion** If you touch an iron rod which is exposed to electric current, you will get an electric shock.
Reason Iron is a good conductor of electricity.
16. **Assertion** The price of a stock is determined on the basis of the demand and supply of the stock.
Reason The value of the sensex increases whenever there is a heavy demand for the stocks which form the Sensex.
17. **Assertion** In the Indian democratic system, the cabinet ministers are appointed by the President.
Reason The Prime minister plays an advisory role.
18. **Assertion** India is a country of diverse cultures, customs and languages.
Reason What we now call India is the modern version of Bharat.
19. **Assertion** India’s President is appointed on a five-year term.
Reason Pratibha Patil was appointed as India’s first woman president in 2007.

20. **Assertion** The World Bank is a leading international financial institution.

Reason Ever since its formation, it has played a major role in disbursing aid and support to economies across the world.

21. **Assertion** India won the inaugural 20-20 world cup cricket tournament.

Reason A young team played fearless and brilliant cricket to win the inaugural T20 world cup.

22. **Assertion** As the pressure increases, the volume decreases if the temperature is constant.

Reason When temperature is constant, pressure and volume are inversely proportional to each other.

23. **Assertion** The Y2k problem had the entire computer industry in a fix towards the end of the 20th century.

Reason The Y2k problem emerged due to the fact that the date field in computers had only two digits.

24. **Assertion** Amartya Sen was awarded the Nobel Prize for Economics.

Reason Amartya Sen has made an invaluable contribution in the field of developmental economics.

25. **Assertion** Manmohan Singh is widely recognised as the chief architect of liberalisation in India.

Reason Manmohan Singh was the finance minister who first started opening up the Indian economy in 1991.

Answer Key

1. (b)	2.(a)	3. (c)	4. (d)
5. (c)	6.(b)	7. (b)	8. (a)
9. (a)	10.(a)	11. (a)	12. (b)
13. (a)	14. (b)	15. (a)	16. (b)
17. (b)	18. (b)	19. (b)	20. (a)
21. (a)	22. (a)	23. (a)	24. (a)
25. (a)			

Solutions

- Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.

2. Both A and R are true, and R is the reason for A. Hence, option (a) is correct.
3. A is true but R is false. Hence, option (c) is correct.
4. A is false but R is true. Hence, option (d) is correct.
5. A is true but R is false. Hence, option (c) is correct.
6. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
7. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
8. Both A and R are true, and R is the reason for A. Hence, option (a) is correct.
9. Both A and R are true, and R is the reason for A. Hence, option (a) is correct.
10. Both A and R are true, and R is the reason for A. Hence, option (a) is correct.
11. Both A and R are true, and R is the reason for A. Hence, option (a) is correct.
12. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
13. Both A and R are true, and R is the reason for A. Hence, option (a) is correct.
14. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
15. Both A and R are true, and R is the reason for A. Hence, option (a) is correct.
16. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
17. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
18. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
19. Both A and R are true, but R is not the reason for A. Hence, option (b) is correct.
20. Both A and R are true and because of the reason the assertion is true. Hence, option (a) is correct.
21. Both A and R are true and because of the reason the assertion is true. Hence, option (a) is correct.
22. Both A and R are true and because of the reason the assertion is true. Hence, option (a) is correct.
23. Both A and R are true and because of the reason the assertion is true. Hence, option (a) is correct.
24. Both A and R are true and because of the reason the assertion is true. Hence, option (a) is correct.
25. Both A and R are true and because of the reason the assertion is true. Hence, option (a) is correct.

Statement—Courses of Action

Most situations that we face in life throw up the possibility of creating an improvement by following certain courses of action. In fact, deciding on a course of action in a given situation is a primary responsibility in any managerial job.

This question type tests you on your ability to decide on how a situation can be tackled/improved/followed up. Look through the following solved examples to get this question type clear.

Directions: In each of the following questions a statement is given followed by two courses of action. A course of action is taken for improvement, follow up, etc. Read the statement carefully and give your answer as

- (a) If only course of action I follows.
- (b) If only course of action II follows.
- (c) If both I and II follow.
- (d) If neither course of action I nor II follows.

Example 1

Statement

The presence of mafiosi in the education system of UP has increased drastically.

Courses of Action

- I. There should be a special taskforce constituted to clean the system of its ills.
- II. The U.P. government should resign immediately.

Solution

Course of action I follows because it is necessary to tackle such antisocial elements.

Course of action II does not follow because the resignation of the government is unlikely to improve the situation. Hence, option (a) is correct.

Example 2

Statement

In a recent survey by the National Health mission it was showed that fruits and vegetables which contain certain vitamins have a higher effect on human health than capsules marketed by private companies that contain the same vitamins.

Courses of Action

- I. Such vitamin capsules marketed by private companies should be banned with immediate effect.
- II. People should prefer fruits and vegetables to capsules marketed by private companies.

Solution

Course of action I does not follow because we are only making a comparison between the effects of food and vegetables against the effect of capsules. Capsules have just been found to be less effective and it does not mean that they are harmful.

Course of action II follows because fruits and vegetables are preferable to capsules for their positive effect on health. Hence, option (b) is correct.

Example 3

Statement

It has been reported that water level is declining rapidly in India.

Courses of Action

- I. There should be a public campaign to educate people about the need to reduce and eliminate the wastage of water.
- II. New technologies should be researched and utilised to store rain water.

Solution

Both the courses of action are logical steps that could be taken to address the problem. Hence, option (c) is correct.

Example 4

Statement

Reliance Telecommunications is playing dirty tricks with its competitor Tata Indicom.

Courses of Action

- I. Tata Indicom should also do the same.
- II. Tata Indicom should decrease the tariff rate of phone calls.

Solution

Both the courses of action do not follow. Tata Indicom should not start playing dirty tricks but should approach the government and its regulatory bodies to help. The IInd course of action is also not valid because it will do nothing to stop the dirty tricks. Hence option (d) is correct.

Example 5

Statement

There is a proposal for the Maharashtra government to clear the slum areas in Mumbai for beautification and economic development.

Courses of Action

- I. The Maharashtra Government should compensate the affected persons with reasonable amount.
- II. The Maharashtra Government should stop beautification and economic development work immediately.

Solution

Only course of action I follows. Government should take care of affected people. It should pay reasonable amount to affected persons. Second course of action does not follow because it is illogical. Hence, option (a) is correct.

EXERCISE

Directions: In each question below is given a statement followed by two courses of action numbered I and II. You have to assume everything in the statement to be true. Then decide which of the two suggested courses of action logically follows for pursuing.

Given Answers

- (a) If only I follows
- (b) If only II follows
- (c) If both I and II follow
- (d) If neither I nor II follows

1. **Statement** A sting operation conducted by a TV news channel proved to be a total failure as the reporter who carried out the sting was found to have created a fake sting in order to gain publicity and money.

Courses of Action I. Disciplinary action must be initiated immediately against the reporter.

II. The TV channel should be penalised and taken off air for a short period of time.

2. **Statement** Across the globe there is an increasing tendency to use child soldiers for terrorist activities.

Courses of Action I. The United Nations Security Council should try to address this problem by asking its member states to crack down heavily on terrorist groups.

II. The U.S. led forces must attack such terrorist groups.

3. **Statement** A state-wide bandh called by opposition parties in Bihar led to a total shut down of normal activities of Bihar's people.

Courses of Action I. The government should call a meeting with opposition parties to work out an approach that does not affect the common man.

II. Opposition Parties must continue their agitation.

4. **Statement** There is a shortage of power in India.

- Courses of Action**
- I. There should be more power projects initiated by the government.
 - II. The government should encourage private investment in power projects.
5. **Statement** The reduction of the tax rates has led to an increase in the tax collection as there has been higher compliance.
- Courses of Action**
- I. It should be made compulsory every Indian to pay tax.
 - II. Tax rates should be further reduced and a further increase in tax collections can be expected on doing so.
6. **Statement** The number of people who die on the roads every year is so alarming that the numbers every year are close to the numbers which can be attributed to the major diseases of the world.
- Courses of Action**
- I. There should be an active campaign for sensitising people towards road safety norms.
 - II. There should be an increased emphasis on enforcing speed limits, road safety rules and traffic management on roads across the world.
7. **Statement** In each of the three years from 2000–2002, shareholders of India's Sensex lost between 15 to 30 per cent of the value of their assets. Yet the average value of the CEO's package of the 30 companies that formed the Sensex was higher in 2002 than in 2000 by almost 50 per cent.
- Courses of Action**
- I. Companies should include greater transparency of compensation packages.
 - II. If a company is in loss, top executives should not get pay hikes.
8. **Statement** An unacceptable number of children die during the first year of their lives. The high incidence of infant deaths is a major cause for concern for the health ministry.
- Courses of Action**
- I. All government hospitals should be privatised to improve health care facilities.
 - II. Governments should commit higher levels of their budget to health services.
9. **Statement** The cream of India's cricket team is likely to retire in the next three years leaving a vacuum which the Indian cricket team is going to struggle to overcome.
- Courses of Action**
- I. The BCCI should start to induct youngsters into the team and start to give them exposure to pressure situations.
 - II. There should be a rotation policy adopted for senior players in order to prolong their careers and keep them injury free.
10. **Statement** Amartya arrived an hour late for the examination. The cut off time to enter the exam hall is maximum 15 minutes late.

- Courses of Action**
- I. A rule is for everyone, so Amartya should not be allowed to enter the exam hall and take the exam.
 - II. Amartya should be rusticated from his college for violating the rule.
11. **Statement** Studies of global warming show that the earth could be hotter by at least 6°C in the next 100 years, thanks to huge greenhouse gas emission.
- Courses of Action**
- I. Since greenhouse gases are responsible for global warming, steps should be taken to control their emission immediately.
 - II. All new industries should be immediately stopped from starting to control environmental damage.
12. **Statement** “New students of our college get frightened by ragging. The ragging prevalent in our college is also creating a bad name for our college”.
- Courses of Action**
- I. The college authorities take stringent action against those who are involved.
 - II. A strict anti ragging law should be passed to control ragging in our college.
13. **Statement** A lot of unscrupulous and non affiliated colleges have started to lure unsuspecting students by giving attractive advertisements.
- Courses of Action**
- I. Students should make appropriate enquiries while enrolling in any course.
 - II. The government should initiate strict action against such college authorities.
14. **Statement** Higher education in America is very expensive. This is perhaps because more and more graduates from across the world try to go to America for higher education.
- Courses of Action**
- I. The American government should stop such migration of students from other countries.
 - II. The American government should clamp down heavily on such institutions and universities which charge high for higher education.
15. **Statement** The lives of millions of people are likely to be endangered in the future as thousands of active landmines are still undiscovered in the fields of Africa.
- Courses of Action**
- I. The International community should immediately take action so that no more landmines are laid down across the world.
 - II. It should be an offence against all humanitarian norms to continue using these landmines.
16. **Statement** There is an alarming and increasing trend of engineering and technical graduates to opt for jobs rather than doing research.
- Courses of Action**
- I. Universities must make research in engineering subjects more attractive.
 - II. It should be made compulsory to pursue research after an engineering degree.

17. **Statement** The colony has suffered major thefts and break-ins due to lax security systems.
Courses of Action
- I. Security should be strengthened in the colony.
 - II. Residents and regular visitors and their vehicles should be provided with identity cards and stickers for better control of who is coming and going into the colony.
18. **Statement** The lack of employment and income during economic depression leads to an increase in the crime rates.
Courses of Action
- I. The government should provide an unemployment compensation as done in advanced countries.
 - II. The government should encourage greater economic activity and increase the number of industries in order to reduce crime rates.
19. **Statement** The appreciation of the rupee has reduced the impact of the oil price rise on the Indian economy although it has also created a problem for exporters.
Courses of Action
- I. The government should allow a further rise in the value of the rupee.
 - II. The government should provide some additional incentives to exporters.
20. **Statement** The U.S. and its allies have been claiming that Iran is developing dangerous chemical, biological and nuclear weapons.
Courses of Action
- I. The international community should boycott Iran.
 - II. The U.S. should wage war against Iran just as it did against Iraq a few years ago.
21. **Statement** Fordon Motors has found that its managerial manpower is not efficient.
Courses of Action
- I. It should fire all its managers.
 - II. It should organise training programs for its managers.
22. **Statement** The TV channel Kal Tak has shown a video recording of some policemen taking bribes from car drivers.
Courses of Action
- I. The cops should be suspended after an inquiry
 - II. The guilty cops should be warned for future.
23. **Statement** The Maharashtra State Electricity Board has been unable to provide 24 hours electricity leading to tremendous economic loss.
Courses of Action
- I. The Government must provide for increasing electricity consumption.
 - II. The government should check the electricity theft cases.

24. **Statement** The flood relief sanctioned for the purpose never reached the intended beneficiaries.

Courses of Action I. Those who are responsible should be checked and suspended.

II. The Government of India should resign taking moral responsibility for the same.

25. **Statement** It has been observed that commercial banks refrain from giving loans to people from poor backgrounds because they cannot provide assets for security.

Courses of Action I. The finance ministry must look into the matter immediately.

II. The finance minister should initiate an enquiry into the matter.

Answer Key

1. (c)	2. (a)	3. (a)	4. (c)
5. (b)	6. (c)	7. (c)	8. (b)
9. (c)	10. (a)	11. (a)	12. (c)
13. (c)	14. (d)	15. (c)	16. (a)
17. (c)	18. (c)	19. (b)	20. (d)
21. (b)	22. (a)	23. (a)	24. (a)
25. (c)			

Solutions

- Both the courses of action are logical. Hence, option (c) is correct.
- Only the first course of action is logical in this situation as a crack down on terrorist organisations is the responsibility of every country. US attacking terrorist groups across the world is an infeasible solution. Hence, option (a) is correct.
- The first course of action follows since it is the responsibility of all parties concerned to ensure that the common man is not affected. The second course of action does not follow as it is opposite what should happen. Hence, option (a) is correct.
- Both the courses of action follow logically in order to solve the power crisis. Hence, option (c) is correct.
- Only the second course of action fits in. Hence, option (b) is correct.
- Both courses of action are correct. Hence, option (c) is correct.

7. Both courses of action are correct. Hence, option (c) is correct.
8. Only the second course of action is logical. Hence, option (b) is correct.
9. Both courses of action are likely to help the Indian cricket team transit from one generation to the next smoothly. Hence, option (c) is correct.
10. Only the first course of action is valid. The second is too drastic. Hence, option (a) is correct.
11. Only the first course of action is valid. We need to take immediate steps to control the emission of green house gases. The second is too drastic. Hence, option (a) is correct.
12. Obviously we need to control the ragging menace. In such a case both options are correct. Hence, option (c) is the answer.
13. Both the courses of action are logical and recommended in the given situation. Hence, option (c) is correct.
14. Neither of the two courses of action are valid since the government should just allow the market economics to prosper. Hence, (d) is the correct option.
15. Both the courses of action are valid logically. Hence, option (c) is correct.
16. Only course of action I is correct. Hence, option (a) is correct.
17. Both courses of action are logical and would help in the improvement of security in the colony. Hence, option (c) is the answer.
18. Both the courses of action are valid. Hence, option (c) is correct.
19. The first course of action will further affect exporters and will make Indian exports unviable in the international markets. Providing some support to exporters at this juncture might be a good idea since it will have to improve the position of Indian exporters which has been jolted by the rupee appreciation. Hence, option (b) is correct.
20. Neither course of action is logical because both are too drastic just on the basis of claims made by one party against the other. Hence, option (d) is correct.
21. Course of action II is logically correct as training is likely to improve the efficiency of the managers. Firing all the managers is illogical and likely to be counterproductive. Hence, option (b) is correct.
22. Course of action I follows, II does not. Hence, option (a) is the answer.
23. Only course of action I follows as the government must make provisions to increase the generation of power. However the course of action II does not follow because the government cannot be expected to check electricity theft cases since that is the work of the Electricity Board and not the government. Hence, option (a) is the answer.
24. Course of action I is logical. Hence, option (a) is the answer.
25. Both the courses of action are logical. Option (c) is correct.

Mathematical Operations

Questions on Mathematical operations will first start with either defining a new meaning to existing symbols or define a new symbol and its mathematical meaning.

You are then required to evaluate the value of an expression by assuming the meaning of the symbols as defined in the question. The following questions will make this question type clear to you.

Illustration 1: If ‘+’ means ‘−’, ‘−’ means ‘¥’, ‘¥’ means ‘[]’, and ‘[]’ means ‘+’ then which of the following will be the value of the expression?

$$32 + 8 ¥ 2 - 3 [] 4$$

(a) 12

(b) 20

(c) 0

(d) 24

Answer and Explanation: Putting the changed signs, the expression can be rewritten as

$$32 - 8 [] 2 ¥ 3 + 4$$

Using BODMAS rule, we have

$$= 32 - 4 ¥ 3 + 4$$

$$= 32 - 12 + 4 = 24$$

Hence, the correct option is (d).

Illustration 2: If A implies ‘+’, B implies ‘−’, C implies ‘¥’, D implies ‘[]’, then calculate the value of the expression $2A3B4C5D1$.

(a) 15

(b) 0

(c) −15

(d) −12

Answer and Explanation: Using the proper signs, the above expression can be written as

$$2 + 3 - 4 ¥ 5 [] 1$$

$$= 5 - 20 = -15$$

Hence, option (c) is correct.

Illustration 3: Which of the following changes would make the given expression correct?

$$4 + 4 \nmid 4 - 4 \sqcap 4 = 4$$

(a) ‘+’ and ‘ $\nmid$ ’

(b) ‘-’ and ‘ $\sqcap$ ’

(c) ‘+’ and ‘ $\sqcap$ ’

(d) both ‘b’ and ‘c’

Answer and Explanation: By making inter-changes given in ‘a’ we get the expression as:

$$4 \nmid 4 + 4 - 4 \sqcap 4 = 4 \text{ which is false.}$$

By making interchanges given in ‘b’, we get expression as

$$4 + 4 \nmid 4 \sqcap 4 - 4 = 4 \text{ which is true.}$$

By making interchanges given in option ‘c’, we get the expression as

$$4 \sqcap 4 \nmid 4 - 4 + 4 = 4 \text{ which is also true.}$$

Hence, option (d) is correct.

Illustration 4: If $A''B$ means add B to A , $A'B$ implies subtract B from A , $A@B$ implies divide A by B , $A*B$ means multiply A with B .

If a train travels with a speed of S_1 from point A to B and returns with a speed of S_2 . The average speed will be represented using the above explained notations?

(a) $(2*S_1''S_2)/(S_1''S_2)$

(b) $(2*S_1*S_2)/(S_1''S_2)$

(c) $(2*S_1''S_2)/(S_1'S_2)$

(d) $(2*S_1@S_2)/(S_1'S_2)$

Answer and Explanation: We know that the formula for average speed is given by

$$2S_1S_2/(S_1 + S_2)$$

Hence the correct option is (b).

Illustration 5: If (l, m, n) is represented as $v [(l + 1)(m + 1)/(n + 1)]$:

What is the value of $(48, 63, 80)$?

(a) $56/9$

(b) $55/9$

(c) 6

(d) 7

Answer and Explanation: Putting the value in the above equation we get

$$\div [(48 + 1)(63 + 1)/(80 + 1)]$$

$$=\div (49 \nmid 64/81) = (7 \nmid 8)/9 = 56/9$$

Hence, the correct option is (a).

EXERCISE

Directions for Questions 1 to 5: If $a + b$ implies $a - b$

$a - b$ implies $a \nmid b$

$a \nmid b$ implies $a \sqcap b$

$a \sqcap b$ implies $a + b$

1. Calculate $5 + 8 - 25 \div 5 \sqcap 40$
(a) 5 (b) -5
(c) 0 (d) 10
2. With which statement can you find the value of 8?
(a) $1 + 2 - 6 \div 3 \sqcap 8$ (b) $1 - 2 + 6 \div 3 \sqcap 8$
(c) $1 - 2 \div 6 + 3 \div 8$ (d) none of these
3. Which of the following is true?
(a) $6 + 2 - 3 \div 1 \sqcap 4 = 12$
(b) $10 + 4 - 3 \div 1 \sqcap 2 = 5$
(c) $6 + 4 - 2 \div 2 \sqcap 1 = 3$
(d) none of these
4. Which of the following is true?
 $(1 + 2 - 3 \div 1 \sqcap 4) / (4 + 5 - 4 \div 2 \sqcap 1) =$
(a) -1/5 (b) 1/5
(c) 1 (d) none of these
5. Find the value of
 $(4 + 3 - 5 \div 1 \sqcap 4) \div (5 + 2 - 3 \div 1 \sqcap 4)$
(a) -7/3 (b) -8/3
(c) 1 (d) none of these

Directions for Questions 6 to 8: If 'a' means +, 'b' means -, 'c' means $\div$ and 'd' means $\sqcap$

6. Calculate the value of $6a7b8c8d2$
(a) -17 (b) 12
(c) -19 (d) none of these
7. Calculate $(8c7)c(7a5)b(6d3)d(3b2)$
(a) 650 (b) 375
(c) 670 (d) none of these
8. What is the value of $9a10b11c15d0$
(a) 1 (b) 2
(c) 3 (d) undefined

Directions for Questions 9 to 12: In each of the following questions if the given interchanges are made in signs and numbers, which one of the four equations would be correct?

9. Given interchanges, signs ‘ $-$ ’ and ‘ $\div$ ’ and numbers 4 and 8 (on the LHS)
- (a) $4 - 8 \div 12 = -23/4$ (b) $4 \div 8 - 2 = 8$
(c) $8 \div 2 - 4 = -15/4$ (d) none of these
10. Given interchanges: 3 and 2, $\div$ and $-$
- (a) $1 + 3 \div 4 - 2 \div 1 = 5$
(b) $1 + 2 - 3 \div 8 \div 4 = 9$
(c) $3 - 1 \div 4 + 2 \div 1 = 11$
(d) none of these
11. Given interchanges: 0.4 and 0.04,
- (a) $1 + 2 - 0.04 \div 0.4 = 1$
(b) $0.4 + 0.04 - 2 \div 2 = 1.76$
(c) $0.04 \div 0.4 - 1 = 0.18$
(d) none of these
12. Given interchanges, $\div$ and $+$, 10, 1
- (a) $5 \div 1 + 10 - 2 = 5$
(b) $8 + 8 - 10 \div 1 = 75$
(c) $4 - 6 \div 10 + 1 = 6$
(d) $3 + 4 - 12 \div 1 \div 10 = 10$
13. Find out the two signs to be interchanged for making the following equation to be correct:
 $5 + 3 - 5 \div 5 \div 1 = 15$
- (a) $\div$ and $-$ (b) $\div$ and $+$
(c) $\div$ and $-$ (d) $+$ and $-$
14. Which of the following two signs need to be interchanged to make the given equation correct?
 $4 + 2 - 5 \div 7 \div 12 = -21$
- (a) $\div$ and $-$ (b) $\div$ and $+$
(c) $\div$ and $+$ (d) $\div$ and $-$
15. Insert proper arithmetical signs between the figures in the following equation
 $12\_4\_2\_1 = 24$
- (a) $-, \div, \div$ (b) $\div, \div, \div$
(c) $+, \div, \div$ (d) none of these
16. If ‘ a ’ implies ‘ $+$ ’, ‘ b ’ implies ‘ $-$ ’, ‘ c ’ implies ‘ $\div$ ’ and ‘ d ’ implies ‘ $\div$ ’, insert proper letter between the figures in the following equation
 $40\_20\_30\_6 = 55$

(a) a, b, c

(b) b, c, d

(c) a, b, d

(d) d, b, a

17. If '+' implies '-', '-' implies '×', '×' implies '÷' and '÷' implies '+', then insert the proper signs between the figures in the given equation

$$12 \_ 8 \_ 4 \_ 2 \_ 1 = 15$$

(a) ×, ÷, -, +

(b) ×, -, +, ÷

(c) +, -, ÷, ×

(d) -, +, ×, ÷

18. If $a = +$, $b = -$, $g = \times$, $d = \div$

Insert the proper notations between the figures in the following sum

$$10 \_ 8 \_ 6 \_ 4 \_ 2 = 6$$

(a) b, a, d, g

(b) a, b, g, d

(c) b, d, g, a

(d) none of these

Directions for Questions 19 to 21: If

$$12 + 2 = 6$$

$$27 + 9 = 3$$

and $15 + 5 = 3$

19. Calculate the value of $182 + 13$

(a) 14

(b) 1.4

(c) 0.14

(d) none of these

20. Calculate the value of $50 + [50 + 10]$

(a) 10

(b) 100

(c) 110

(d) 5

21. Calculate $(10 + (6 + (3 + (2 + 1))))$

(a) 4

(b) 5

(c) 8

(d) none of these

Directions for Questions 22 to 25: If

$$3 \div 4 = 5$$

$$5 \div 12 = 13$$

Then solve the following question.

22. Calculate the value of $7 \div 24$

(a) 12

(b) 48

(c) 10

(d) none of these

23. Calculate the value of $8 \div 9$

(a) 145

(b) $\sqrt{145}$

(c) 12

(d) 12.5

24. $9 \div ? = 41$

(a) 35

(b) 30

(c) 40

(d) none of these;

25. Obtain $\{3 \div (5 \div 6)\} = ?$

(a) 5

(b) $\sqrt{70}$

(c) $5\sqrt{3}$

(d) none of these

Directions for Questions 26 to 30: If

M means greater than

N means equal to

O means not less than

P means less than

Q means not equal to

and R means not greater than

26. If yPz and zNa , then which of the following is true?

(a) yMa

(b) yPa

(c) yOa

(d) none of these

27. If $10aM6b$ and $12bM20c$

(a) $5aMc$

(b) $aM5c$

(c) aNc

(d) none of these

28. If $aP0$ and $b+2Pa$, then which of the following is true?

(a) $bM-2$

(b) $bN-2$

(c) $bP-2$

(d) none of these

29. If sOt , tRu and tRv then which of the following could be true about s and u/v or u and v ?

(a) sMu

(b) sPv

(c) uNv

(d) can't be determined

30. If $|t-u| M0$, then which of the following is/are true

(a) sMt

- (b) tMs
- (c) sNt
- (d) (a), (b) and (c) could be true

Directions for Questions 31 to 33: If

aAb implies $a + b$

aMb implies $a - b$

aPb implies $a \neq b$

aQb implies $a \cap b$

31. Which of the following equations is correct?

- (a) $30Q10A4P2M2 = 15$
- (b) $5P2A4Q2P2 = 14$
- (c) $2Q3B5P6A7 = -5$
- (d) none of these

32. Calculate $5A6M3P4Q8$

- (a) 10
- (b) 9
- (c) 9.5
- (d) 10.5

33. Calculate $(2A3M4P5)P(5M6P8Q4)$

- (a) -105
- (b) -120
- (c) 120
- (d) none of these

Directions for Questions 34 to 36:

A''B implies $A + B$

A'b implies $A - B$

A@B implies $A \cap B$

A*B implies $A \neq B$

34. A man travels with a speed of f from A to B and returns from B to A with speed h . What is the average speed of the man over the entire journey?

- (a) $2f'h/f'h$
- (b) $2f@h/f'h$
- (c) $2f*h/f@h$
- (d) none of these

35. Jadugar has a jadoo box which has a length, breadth and height which can be represented by ' x ', ' a ', ' c ' respectively. What is the formula for its total surface area?

- (a) $2[(x'a)*(a''c)*(x''c)]$
- (b) $2[(x*a)''(a*c)''(x*c)]$
- (c) $2[(x'a)*(a*c)*(x*c)]$
- (d) none of these

36. At the Wave cinemas in Sector 18 in Noida, charges for parking are as follows

1. For cycles Rs 2
2. For scooters Rs 5
3. For cars Rs 20

On a particular day there were '25' cycles, '40' scooters and '100' cars parked at the stand, what was the amount collected in that particular day?

- (a) $(25 \times 2) \times (40 \times 5) \times (100 \times 20)$
- (b) $(25 \times 2) @ (40 \times 5) @ (100 \times 20)$
- (c) $(25 \times 2) \times (40 \times 5) \times (100 \times 20)$
- (d) none of these

Directions for Questions 37 to 41: If

AXB implies $A^2 + B^2$

AYB implies $A^2 - B^2$

AZB implies $(A + B)^2$

AMB implies $(A - B)^2$

37. Calculate the value of $(4X5)Y(6X7)$

(a) 5544	(b) -5544
(c) 500	(d) none of these

38. Calculate the value of $(373)M(413)$

(a) 1600	(b) 900
(c) 400	(d) 2500

39. If $(AMB) = (AZB)$ then which of the following is true.

(a) $A - B = 0$	(b) $A^2 = B^2$
(c) $A.B = 0$	(d) $A = 0$

40. Calculate $(3Z4) - (5M5)$

(a) 49	(b) 25
(c) 64	(d) none of these

41. Calculate the value of $(2Z2)M(4Y4)$

(a) 16	(b) 256
(c) 25	(d) none of these

Directions for Questions 42 and 43: If '*' indicates either '+' or '×', solve the following questions.

42. What is the maximum value of

$$1*2*3*4*5*6*7$$

- (a) 5040 (b) 5041
(c) $7!/2$ (d) none of these

43. What is the minimum value of

$$1*2*3*4$$

- (a) 10 (b) 9
(c) 11 (d) 14

Directions for Questions 44 to 46: If

A indicates $>$

B indicates $<$

C indicates $=$

D indicates π

E indicates $+$

F indicates $-$

G indicates $*$

H indicates $[]$

44. Which of the following is false?

- (a) $(5E7)A(4E3)A(1E2)$
(b) $(5E6)A(6E12)A(13E6)$
(c) $(12H3)C(40H10)C(60H15)$
(d) all of these are false

45. Calculate $(32H(2H(6H3)))$

- (a) 16 (b) 32
(c) 8 (d) none of these

46. Calculate $5E3F4G6H2$

- (a) 1.5 (b) 1
(c) -4 (d) none of these

Answer Key

1. (a)	2. (b)	3. (c)	4. (b)
5. (a)	6. (c)	7. (c)	8. (d)
9. (d)	10. (b)	11. (d)	12. (d)

13. (a)	14. (b)	15. (b)	16. (c)
17. (a)	18. (b)	19. (a)	20. (a)
21. (a)	22. (d)	23. (b)	24. (c)
25. (b)	26. (b)	27. (d)	28. (c)
29. (d)	30. (d)	31. (b)	32. (c)
33. (d)	34. (d)	35. (b)	36. (c)
37. (b)	38. (a)	39. (c)	40. (a)
41. (b)	42. (b)	43. (b)	44. (b)
45. (b)	46. (c)		

Solutions

- The expression will become $5 - 8 \div 25 \div 5 + 40$. Using the BODMAS rule we will get:
 $5 - 40 + 40 = 5$. Hence, option (a) is correct.
- Looking at option (b), we will get, $1 - 2 + 6 \div 3 \div 8$ becomes $1 \div 2 - 6 \div 3 + 8 = 8$. Hence, option (b) is the correct answer.
- Option (c) gives us $6 - 4 \div 2 \div 2 + 1 = 3$. Hence, this is correct.
- $(1 + 2 - 3 \div 1 \div 4) / (4 + 5 - 4 \div 2 \div 1) \div (1 - 2 \div 3 \div 1 + 4) / (4 - 5 \div 4 \div 2 + 1) = -1/-5 = 1/5$. Hence, (b) is the answer.
- $(4 + 3 - 5 \div 1 \div 4) \div (5 + 2 - 3 \div 1 \div 4) = (4 - 3 \div 5 \div 1 + 4) \div (5 - 2 \div 3 \div 1 + 4) = -7/3$. Hence, option (a) is the answer.
- $6a7b8c8d2 = 6 + 7 - 8 \div 8 \div 2 = -19$. Hence, (c) is the answer.
- $(8c7)c(7a5)b(6d3)d(3b2)$ becomes $56 \div 12 - 2 \div 1 = 670$. Option (c) is the answer.
- The expression contains a division by 0, hence is undefined. Option (d) is the answer.
- None of these, i.e. option (d) is correct.
- The given expression will become $1 + 3 \div 2 \div 8 - 4 = 9$. Option (b) is the answer.
- Checking each of the four options we will get none of these the answer. Hence, option (d) is the answer.
- Option (d) becomes correct.
- If the signs are changed according to the first option the equation is satisfied. Hence, option (a) is correct.
- If the signs are changed according to the second option the equation is satisfied. Hence, option (b) is correct.
- Insertion of $\div, \div, \div$ in that order will make $12 \div 4 \div 2 \div 1 = 24$. Hence, option (b) is correct.
- $40 + 20 - 30 \div 6 = 60 - 5 = 55$. Hence, a, b, d. Option (c) is correct.
- $12 \div 8 \div 4 - 2 + 1$ would mean $12 + 8 \div 4 \div 2 - 1 = 12 + 4 - 1 = 15$. Hence, the order given

in option (a) is correct.

18. Option (b) is correct.

Solutions 19 to 21:

It is clear that the + sign means $\square$. Hence,

19. $182 + 13$ would give us a value of 14. Hence, (a) is the answer.

20. $50/5 = 10$. Hence, (a) is the answer.

21. $10/2.5 = 4$. Hence, correct option is (a).

Solutions 22 to 25:

The relationship that is defined through $a \nless b = \sqrt{(a^2 + b^2)}$

Thus, $3 \nless 4 = \sqrt{25} = 5$ and $5 \nless 12 = \sqrt{(25 + 144)} = 13$.

22. $7 \nless 24 = \sqrt{625} = 25$. Hence, option (d) is the answer.

23. $8 \nless 9 = \sqrt{(64 + 81)} = \sqrt{145}$. Hence, option (b) is the answer.

24. The required value will be got by the square root of the difference between 41^2 and 9^2 $\nless$ $1681 - 81 = 1600$. Hence, the required answer is 40. Correct answer is option (c).

25. The required value would be square root of $61 + 9 = \sqrt{70}$. Hence, option (b) is the answer.

26. yPz means that y is less than z and zNa means $z = a$. Thus, y is less than a $\nless$ yPa . Option (b) is correct.

27. $10a$ is greater than $6b$. and $12b$ is greater than $20c$ $\nless$ $6n$ is greater than $10c$. Thus $10a$ is greater than $10c$ or a is greater than c . Option (d) is correct.

28. a is negative and $b + 2$ is less than a implies that b must be below -2 . Hence, option (c) is correct.

29. Nothing can be said about the relationships between s , u or v or for that matter about u and v . Hence, cannot be determined. The correct answer is option (d).

30. Since the modulus value is always positive, all the three, i.e. the first, second and third relationships are possible. Hence, option (d) is correct.

31. Option (b) is correct since we will get $10 + 4 = 14$.

32. $11 - 1.5 = 9.5$. Option (c) is correct.

33. $(-15)(-7) = 105$. Hence, option (d) is correct.

34. It can be seen that none of these is correct. Hence, (d) is the answer.

35. The surface area of a cuboid box is equal to twice the areas of each of the sides. Hence, option (b) is correct.

36. The correct answer is option (c).

37. $41^2 - 85^2 = 1681 - 7225 = -5544$. Hence, option (b) is correct answer.

38. $(-40)^2 = 1600$. Hence, option (a) is correct answer.
39. The given expression tells us that $(A - B)^2 = (A + B)^2$. This can only occur when $2AB = -2AB = 0$. Hence, option (c) is correct.
40. $7^2 = 49$. Hence, correct answer is option (a).
41. $16^2 = 256$. Hence, correct answer is option (b).
42. The maximum value will be obtained when we use multiplication between 2 to 7 and addition between 1 and 2. Hence, option (b) is the answer.
43. The minimum value will be got if we use a multiplication between 1 and 2 and addition between 2, 3, and 4. The value will be $1 \times 2 + 3 + 4 = 9$. Hence, option (b) is the answer.
44. It can be seen that options 1 and 3 are correct, but option (b) is wrong. Hence, option (b) is the correct answer.
45. $32/1 = 32$. Hence, option (b) is correct.
46. $5 + 3 - 12 = -4$. Hence, option (c) is correct.

Part 3

Reasoning Archives

Section 1

Past Years' Solved Questions from the CAT

 CAT 2008

 CAT 2007

 CAT 2006

 CAT 2005

 CAT 2004

 CAT 2003

 CAT 2002

 CAT 2001

 CAT 2000

 CAT 1999

1. A shop stores x kg of rice. The first customer buys half this amount plus half a kg of rice. The second customer buys half the remaining amount plus half a kg of rice. Then the third customer also buys half the remaining amount plus half a kg of rice. Thereafter, no rice is left in the shop. Which of the following best describes the value of x ?
- (a) $2 \leq x \leq 6$ (b) $5 \leq x \leq 8$
(c) $9 \leq x \leq 12$ (d) $11 \leq x \leq 14$
(e) $13 \leq x \leq 18$

Directions for Questions 2 and 3:

Mark (a) if the question can be answered from A alone but not from B alone.

Mark (b) if the question can be answered from B alone but not from A alone.

Mark (c) if the question can be answered from A alone as well as from B alone.

Mark (d) if the question can be answered from A and B together but not from any of them alone.

Mark (e) if the question can not be answered even from A and B together.

In a single elimination tournament, any player is eliminated with a single loss. The tournament is played in multiple rounds subject to the following rule:

- (a) if the number of players, say n , in any round is even, then the players are grouped into $n/2$ pairs. The players in each pair play a match against each other and the winner moves on to the next round.
- (b) if the number of players, say n , in any round is odd, then one of them is given a bye, that is, he automatically moves on to the next round. The remaining $(n - 1)$ players are grouped into $(n - 1)/2$ pairs. The players in each pair play a match against each other and the winner moves on to the next round. No player gets more than one bye in the entire tournament.

Thus, if n is even, then $n/2$ players move on to the next round while if n is odd, then $(n + 1)/2$ players

move on to the next round. The process is continued till the final round, which obviously is played between two players. The winner in the final round is the champion of the tournament.

2. What is the number of matches played by the champion?
 - (A) The entry list for the tournament consists of 83 players.
 - (B) The champion received one bye.
3. If the number of players, say n , in the first round was between 65 and 128, then what is the exact value of n ?
 - (A) Exactly one player received a bye in the entire tournament.
 - (B) One player received a bye while moving on to the fourth round from the third round.

Directions for Questions 4 and 5:

Five horses, Red, White, Grey, Black and Spotted participated in a race. As per the rules of the race the persons betting on the winning horse gets four times the bet amount and those betting on the horse that came in second gets thrice the bet amount. Moreover, the bet amount is returned to those betting on the horse that came in third, and the rest lose the bet amount. Raju bets ` 3000, ` 2000 and ` 1000 on Red, White and Black horses respectively and ends up with no profit and no loss.

4. Which of the following can not be true?
 - (a) At least two horses finished before Spotted.
 - (b) Red finished last.
 - (c) There were three horses between Black and Spotted.
 - (d) There were three horses between White and Red.
 - (e) Grey came in second.
5. Suppose, in addition, it is known that Grey came in fourth. Then which of the following cannot be true?
 - (a) Spotted came in first.
 - (b) Red finished last.
 - (c) White came in second.
 - (d) Black came in second.
 - (e) There was one horse between Black and White.

Directions for Questions 6–10: Answer the following questions based on the information given below:

Abdul, Bikram and Chetan are three professional traders who trade in shares of a company XYZ Ltd. Abdul follows the strategy of buying at the opening of the day at 10 am and selling the whole lot at the close of the day at 3 pm. Bikram follows the strategy of buying at hourly intervals: 10 am, 11 am, 12 noon, 1 pm and 2 pm, and selling the whole at the close of the day. Further he buys an equal number of shares in each purchase. Chetan follows a similar pattern as Bikram but his strategy is somewhat different. Chetan's total investment amount is divided equally among his purchases. The profit or loss made by each investor is the difference between the sale value at the close of the day less the investment in purchase. The 'return' for each investor is defined as the ratio of the profit or loss to the investment amount expressed as a percentage.

6. Which one of the following statements is always true?
 - (a) Abdul will not be the one with minimum return
 - (b) Return for Chetan will be higher than that of Bikram
 - (c) Return for Bikram will be higher than that of Chetan
 - (d) Return for Chetan can not be higher than that of Abdul
 - (e) None of the above
7. On a 'boom' day the share price of XYZ Ltd. keeps rising throughout the day and peaks at the close of the day. Which trader got the minimum return on that day?
 - (a) Bikram
 - (b) Chetan
 - (c) Abdul
 - (d) Abdul or Chetan
 - (e) Cannot be determined
8. On a day of fluctuating market prices, the share price of XYZ Ltd. ends with a gain, i.e., it is higher at the close of the day compared to the opening value. Which trader got the maximum return on that day?
 - (a) Bikram
 - (b) Chetan
 - (c) Abdul
 - (d) Bikram or Chetan
 - (e) Cannot be determined

One day two other traders, Dane and Emily joined Abdul, Bikram and Chetan for trading in the shares of XYZ Ltd. Dane followed a strategy of buying equal number of shares at 10 am, 11 am, and 12 noon, and selling the same numbers at 1 pm, 2 pm and 3 pm. Emily, on the other hand, followed the strategy of buying shares using all her money at 10 am and selling all of them at 12 noon and again buying the shares for all the money at 1 pm and again selling all of them at the close of the day at 3 pm. At the close of the day following was observed:

- (a) Abdul lost money in the transactions.
 - (b) Both Dane and Emily made profits.
 - (c) There was an increase in the share price during the closing hour compared to the price at 2 pm.
 - (d) Share price at 12 noon was lower than the opening price.
9. Which of the following is necessarily false?
 - (a) Share price was at its lowest at 2 pm.
 - (b) Share price was at its lowest at 11 am.
 - (c) Share price at 1 pm was higher than the share price at 2 pm.
 - (d) Share price at 1 pm was higher than the share price at 12 noon.
 - (e) None of the above.
 10. The share price was at its highest at

- (a) 10 am
- (c) 12 noon
- (e) Cannot be determined

- (b) 11 am
- (d) 1 pm

Directions for Questions 11–13: Answer the following questions based on the statements given below:

- (a) There are three houses on each side of the road.
- (b) These six houses are labeled as P, Q, R, S, T and U.
- (c) The houses are of different colours, namely, Red, Blue, Green, Orange, Yellow and White.
- (d) The houses are of different heights.
- (e) T, the tallest house, is exactly opposite to the Red coloured house.
- (f) The shortest house is exactly opposite to the Green coloured house.
- (g) U, the Orange coloured house, is located between P and S.
- (h) R, the Yellow coloured house, is exactly opposite to P.
- (i) Q, the Green coloured house, is exactly opposite to U.
- (j) P, the white coloured house, is taller than R, but shorter than S and Q.

11. Which is the second tallest house?

- (a) P
- (b) S
- (c) Q
- (d) R
- (e) Cannot be determined

12. What is the colour of the tallest house?

- (a) Red
- (b) Blue
- (c) Green
- (d) Yellow
- (e) None of these

13. What is the colour of the house diagonally opposite to the Yellow colored house?

- (a) White
- (b) Blue
- (c) Green
- (d) Red
- (e) None of these

Directions for Questions 14–17: Answer the following questions based on the information given below:

In a sports event, six teams (A, B, C, D, E and F) are competing against each other. Matches are scheduled in two stages. Each team plays three matches in stage-1 and two matches in stage-2. No team plays against the same team more than once in the event. No ties are permitted in any of the matches. The observations after the completion of stage-1 and stage-2 are as given below.

Stage-1

- One team won all the three matches.
- Two teams lost all the matches.
- D lost to A but won against C and F.
- E lost to B but won against C and F.
- B lost at least one match.
- F did not play against the top team of stage-1.

Stage-2

- Æ The leader of Stage-1 lost the next two matches.
- Æ Of the two teams at the bottom after stage-1, one team won both matches, while the other lost both matches.
- Æ One more team lost both matches in stage-2.
14. The only teams that won both the matches in stage-2 is(are):
- (a) B (b) E & F
- (c) A, E & F (d) B, E & F
- (e) B & F
15. The teams that won exactly two matches in the event are:
- (a) A, D & F (b) D & E
- (c) E & F (d) D, E & F
- (e) D & F
16. The team(s) with the most wins in the event is (are):
- (a) A (b) A & C
- (c) F (d) E
- (e) B & E
17. The two teams that defeated the leader of stage-1 are:
- (a) F & D (b) E & F
- (c) B & D (d) E & D
- (e) F & D

Directions for Questions 18–20: Answer the following questions based on the information given below:

	Sectional Cut-off Marks				Aggregate Cut-off Marks
	Section A	Section B	Section C	Section D	
College 1	42	42	42		176
College 2		45	45		175

College 3			46		171
College 4	43			45	178
College 5	45		43		180
College 6		41		44	176

For admission to various affiliated colleges, a university conducts a written test with four different sections, each with a maximum of 50 marks. The following table gives the aggregate as well as the sectional cut-off marks fixed by six different colleges affiliated to the university. A student will get admission only if he/she gets marks greater than or equal to the cut-off marks in each of the sections and his/her aggregate marks are at least equal to the aggregate cut-off marks as specified by the college.

18. Charlie got calls from two colleges. What could be the minimum marks obtained by him in a section?

(a) 0
(b) 21

(c) 25
(d) 35

(e) 41
19. Aditya did not get a call from even a single college. What could be the maximum aggregate marks obtained by him?

(a) 181
(b) 176

(c) 184
(d) 196

(e) 190
20. Bhama got calls from all colleges. What could be the minimum aggregate marks obtained by her?

(a) 180
(b) 181

(c) 196
(d) 176

(e) 184

Directions for Questions 21–24: Each of the following questions has a paragraph from which the last sentence has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

21. Most people at their first consultation take a furtive look at the surgeon’s hands in the hope of reassurance. Prospective patients look for delicacy, sensitivity, steadiness, perhaps unblemished pallor. On this basis, Henry Perowne loses a number of cases each year. Generally, he knows it’s about to happen before the patient does: the downward glance repeated, the prepared questions beginning to falter, the overemphatic thanks during the retreat to the door.

(a) Other people do not communicate due to their poor observation.
(b) Other patients do not like what they see but are ignorant of their right to go elsewhere.

- (c) But Perowne himself is not concerned.
 - (d) But other will take their place, he thought.
 - (e) These hands are steady enough, but they are large.
22. Trade protectionism, disguised as concern for the climate, is raising its head. Citing competitiveness concerns, powerful industrialised countries are holding out threats of a levy on imports of energy-intensive products from developing countries that refuse to accept their demands. The actual sense of protectionist sentiment in the OECD countries is, of course their current lackluster economic performance, combined with the challenges posed by rapid economic rise of China and India—in that order.
- (a) Climate change is evoked to bring trade protectionism through the back door.
 - (b) OECD countries are taking refuge in climate change issues to erect trade barriers against these two countries.
 - (c) Climate change concerns have come as a convenient stick to beat the rising trade power of China and India.
 - (d) Defenders of global economic status quo are posing as climate change champions.
 - (e) Today's climate change champions are the perpetrators of global economic inequity.
23. Mattancherry is Indian Jewry's most famous settlement. Its pretty streets of pastel coloured houses, connected by first-floor passages and home to the last twelve saree-and-sarong-wearing, white-skinned Indian Jews are visited by thousands of tourists each year. Its synagogue, built in 1568, with a floor of blue-and-white china tiles, a carpet given by Haile Selassie and the frosty Yahel selling tickets at the door, stands as an image of religious tolerance.
- (a) Mattancherry represents, therefore, the perfect picture of peaceful co-existence.
 - (b) India's Jews have almost never suffered discrimination, except from European colonisers and each other.
 - (c) Jews in India were always tolerant.
 - (d) Religious tolerance has always been only a façade and nothing more.
 - (e) The pretty pastel streets are, thus, very popular with the tourists.
24. Given the cultural and intellectual interconnections, the question of what is 'Western' and what is 'Eastern' (or Indian) is often hard to decide, and the issue can be discussed only in more dialectical terms. The diagnosis of a thought as 'purely Western' or 'purely Indian' can be very illusory.
- (a) Thoughts are not the kind of things that can be easily categorised.
 - (b) Though 'occidentalism' and 'orientalism' as dichotomous concepts
 - (c) 'East is East and West is West' has been a discredited notion for a long time now.
 - (d) Compartmentalising thoughts is often desirable.
 - (e) The origin of a thought is not the kind of thing to which 'purity' happens easily.

Answer Key

1. (b)	2. (d)	3. (d)	4. (d)
5. (c)	6. (e)	7. (a)	8. (e)
9. (e)	10. (a)	11. (e)	12. (b)
13. (d)	14. (d)	15. (e)	16. (e)
17. (b)	18. (c)	19. (c)	20. (b)
21. (c)	22. (d)	23. (a)	24. (e)

Solutions:

1. This question is based on odd numbers as only with an odd value of x would you keep getting integers if you halved the value of rice and took out another half a kg from the shop store.

From the options, let us start from the second option. (**Note:** In such questions, one should make it a rule to start from one of the middle options only as the normal realisation we would get from checking one option would have been that more than one option gets removed if we have not picked up the correct option- as we would normally know whether the correct answer needs to be increased from the value we just checked or it should be decreased.)

Thus trying for $x = 7$ according to the second option, you would get

$7 \div 3 \div 1 \div 0$ (after three customers).

This means that $5 \pounds x \pounds 8$ is a valid option for this question. Also, since the question is definitive about the correct range, there cannot be two ranges. Hence, we can conclude that option (b) is correct.

Note: The total solving time for this question should not be more than 30 seconds. Even, if you are not such an experienced solver through options, and you had to check 2–3 options in order to reach the correct option, you would still need a maximum of 90 seconds.

Estimation of LOD: LOD 1

2. If there are 83 players in the tournament, then it is evident that there would be the following progression of number of players left in the tournament—83, 42, 21, 11, 6, 3, 2, 1. This means that there would be 7 rounds in the tournament. [**Note:** A logic that you should have known here perhaps is that for any number of players between 65 to 128 the number of rounds would always be 7.]

However, we cannot determine the answer to the question asked only on the basis of the first statement as we do not know how many matches the champion actually played and how many byes he got. The Statement B gives us that information and hence we know the exact number of matches played by the champion by using both parts of the information.

3. If we use statement A alone, the logic here is that there should be only one digression from even numbers throughout the tournament.

Suppose, this digression happened when there were 3 players left in the tournament, then in the previous rounds there must have been 6, 12, 24, 48 and 96 players respectively.

Note that the next value which allows only one single non-even number possibility would be at 7.

In such a case, the number of players would be 14, 28, 56 and 112 respectively in the rounds prior to the round which had only 7 players.

Similarly, the next such value which would yield only one odd number in the entire series would be at 15. (You can do a trial and error for 9, 11 and 13 and eliminate these possibilities as they would lead to at least one more odd number in later rounds). In this case, the progression would be 15, 30, 60 and 120.

From this point, we can eliminate 17, 19, 21, 23, 25, 27 and 29 on the same basis as we eliminated 9, 11 and 13, viz. they would yield at least two odd numbers in the whole series of numbers, thus giving way to at least 2 byes during the tournament. At 31, we again have a possible solution as 62 and 124.

At this point you should realise that there are multiple solutions possible if we use only statement A. However, between the multiple solutions enlisted above you should realise that if we were to add the information given in statement B, then only one possibility exists—since if the bye happens in the third to the fourth round then only 124, 62, 31, 16, 8, 4, 2, 1 can be the possible progression of number of players left after each round.

Solutions for Questions 4 and 5:

Red	White	Grey	Black	Spotted
3000	2000		1000	

The given question gives us three types of return:

x4 (for first position), x3 (for second position), x1 (For third position).

Systematic thinking at this point would give us the following possibilities for creating a return of 6000.

Possibility 1: $1000 \times 4 + 2000 \times 1$ and the ` 3000 bet should get lost. (This would happen if black comes first and white comes third. Also, red should come 4th or 5th)

Possibility 2: $1000 \times 3 + 3000 \times 1$ and the ` 2000 bet should get lost. (This would happen if black comes second and red comes third. Also, white should come 4th or 5th.)

Possibility 3: 2000×3 and the ` 1000 and the ` 3000 bet get lost. (This would happen if white comes second and Red and Black come 4th and 5th in some order.)

Note: These realisations come from the fact that- we can neither quadruple nor triple 3000 and neither can we quadruple 2000. This leaves us with the possibilities as discussed above. Like most thought patterns used in the CAT, this is also a standard thought pattern – and you can find multiple examples of this thought pattern in my book ‘QA for CAT’ as well as in ‘Data Interpretation for the CAT’. This thinking leads us to the following matrix:

Possibility 1	Black	Grey/spotted	White	Grey/Red/spotted	Grey/Red/Spotted
Possibility 2	Grey/spotted	Black	Red	Grey/spotted/White	Grey/spotted/White
Possibility 3	Grey/spotted	White	Grey/spotted	Red/Black	Black/Red

Based on this it is evident that:

4. There cannot be three horses between white and red—as for that to happen one of them should be in the first position and the other in the last position. Hence, Option (d) is correct (as it is not possible).
5. If grey came fourth, then it must be one of the first two possibilities. In both these cases, white cannot come second. Hence, option (c) is correct.

Solutions for Questions 6–10:

The following set of questions is based on your understanding of the concept of weighted averages.

The simplest one to understand is the one about Abdul. Abdul will make a profit if the price goes up and loss if the price goes down.

Further, his percentage profit /loss would be exactly the same as the percentage increase/decrease of the share price.

Before you hit the question, you need to understand clearly the difference between Bikram & Chetan's strategies.

Since, Chetan invests an equal amount at every hour, the no. of shares he has bought would be dependent on the price fluctuation. For example, if the prices are going down on a particular day, he would end up purchasing more shares at the lower price. In fact, his strategy of investing an equal amount every hour ensures that he buys a higher number of shares at the lower prices irrespective of the fluctuation. Thus, his average purchase price per share would be the weighted average of all prices with higher weights allocated to the lowest once during the day.

For Bikram on the other hand, his investment would always be in buying an equal no. of shares every hour. Thus, his average purchase price would always be the simple average of his five purchase prices.

Naturally, on any fluctuating prices day Bikram's average price would be greater than Chetan's average price, as Chetan's average price would be the weighted average of the 5 prices @ 10, 11, 12, 1 & 2 with higher weights attached to the lower prices.

Note: What you need to have clear in your mind is that weighted average with higher weights attached to the lower prices would always have a lower value than a simple average.

However, if the prices are flat the whole day (i.e. no change in prices throughout the day) the weighted average & simple average would both be equal to that single price.

6. We can solve this by looking at and eliminating individual options. Option (a) cannot be true as Abdul would have the minimum return if the price is highest at 10 am & continuously drops till 3 pm.

Option (b) would normally 'have been true, but is not always true because if the price remains constant at 10, 11, 12, 1 & 2, Chetan would have the same return as Bikram.

Option (c) is also eliminated as we have seen that most of the time Chetan has a higher return than Bikram. Option (d) can be eliminated on the basis of the thought that it is easily possible

that Chetan has higher return than Abdul. For example, on a day of consistently reducing prices, Abdul has the least return.

Thus, option (e) is correct.

7. Abdul would get the maximum return on that day, since his purchase price (average) would be least. Also, between Chetan & Bikram, we know that Bikram's average purchase price is higher & hence he would have the least returns.
8. The maximum return could be for Abdul or Chetan but between the two we cannot determine whose gain was more because in order to get that we would need to know the exact price at each hour starting from 10 am.

Before solving 9 & 10 we need to logically work out what happened with respect to prices on that day.

- (a) Since Abdul lost money, Price at 3 pm < Price at 10 am, i.e. $P_3 < P_{10}$
- (b) Dane made profits means $P_{10} + P_{11} + P_{12} < P_1 + P_2 + P_3$
- (c) Emily made profits means $P_{10} + P_1 < P_{12} + P_3$
- (d) $P_2 < P_3$
- (e) $P_{12} < P_{10}$
- (f) From (c) & (e) above, we know that $P_3 > P_1$.
- (g) Also, from (c) we have $P_{10} - P_{12} < P_3 - P_1$ & from (b) & (g) we have: $2 P_{10} + P_{11} < 2 P_3 + P_2 \nRightarrow P_{11} < P_2$
9. None of the options (a–d) can be said to be necessarily false. As:
Option (a) (share price least at 2 pm) can happen.
Option (b) (share price least at 11 am) can also happen.
In terms in equalities what we know is:
 $P_{10} - P_{12}, P_{10} < P_3, P_3 > P_1$ & $P_3 > P_2$ & $P_2 > P_{11}$
Option (c) & option (d) could also be true in some cases & hence are not necessarily false.
10. From the above we have:
 $P_{10} > P_{12}, P_{10} > P_3$ & since $P_3 > P_1$ & $P_3 > P_2$ it follows that $P_{10} > P_{11}$ & $P_{10} > P_{11}$ would also be true.
Thus, the highest price would definitely be at 10 am.

Solutions for Questions 11–13:

The following figure can be drawn based on the information provided:

P/S U S/P

Road

R/T Q T/R

Figure 1

Table 1:

	Case 1	Case 2
Tallest	T Blue	T Blue
2nd Tallest	Q Green	S Red
3rd Tallest	S Red	Q Green
4th Tallest	P White	P White
5th Tallest	R Yellow	R Yellow
Shortest	U Orange	U Orange

The answers can be read off the table:

11. Can be either Q or S. Hence, we cannot determine this.
12. The Tallest house T is Blue.
13. From figure 1, it is clear S is diagonally opposite R (the yellow colored house). Thus, S being Red in color, Red is the correct answer.
- * Positions have lost all three of their matches.

Solutions for Questions 14–17:

The thought Flowchart for this question set would go as follows:

Stage 1:

From the first 5 clues:

Initial possibility	Team	Team name	Match 1 Results	Match 2 Results	Match 3 Results
ABCDEF	1	Not D, Not E, Not E, Not F & Not B. Hence A	Win	Win	Win
ABCDEF	2	D	Lost A	Win C	Win F
ABCDEF	3	E	Lost B	Win C	Win F
ABCDEF	4	–	–	–	–
ABCDEF	5	Not A, D, B, E. Hence C	Lost D	Lost E	Lost
ABCDEF	6	Not A, D, B, E. Hence F	Lost D	Lost E	Lost

Note: We have to allocate C & F to team 5 & 6 in any order as both those

- (a) Once we determine that Team 1 is A we can eliminate A from the possibility list for team 2 to team 6.
- (b) We also know that there would be a total of 9 matches in the first stage (18 entries in the table divided by 2). Consequently there would be 9 wins & 9 losses.

Out of the 9 wins A (3 wins) + D (2 wins) + E (2 wins) accounts for 7 wins. Thus, Team 4 (Team B) would also win 2 & lose 1.

At this stage, the table would transform to

Matches (Result & opponent)

Team	1	2	3
A	Won D	Won	Won
D	Lost A	Won C	Won F
E	Lost B	Won C	Won F
B	Lost	Won E	Won
C	Lost D	Lost E	Lost
F	Lost D	Lost E	Lost

At this stage, we still need to fix three wins & three losses. Since two of these wins were for A & A has not won against F, it is natural that A’s wins would have been against B & C. Thus, B’s win would be against F.

The final table would look like:

Team	1 Match Result	2 Match Result	3 Match Result	To play
A	Won D	Won B	Won C	F & E
D	Lost A	Won C	Won F	B & E
E	Lost B	Won C	Won F	A & D
B	Lost A	Won E	Won F	C & D
C	Lost D	Lost E	Lost A	B & F
F	Lost D	Lost E	Lost B	A & C

We are now ready to work out the stage 2 results.

From the first 2 clues of the second stage, we know that A loses to E & F. So C must have lost both its matches & F must have won both its matches.

	Stage 1			Stage 2	
Team	1	2	3	4	5
A	Won D	Won B	Won C	Lost E	Lost F
D	Lost A	Won C	Won F	E ?	B ?
E	Lost B	Won C	Won F	Won A	D?
B	Lost A	Won E	Won F	Won C	D?
C	Lost D	Lost E	Lost A	Lost B	Lost F

F	Lost D	Lost E	Lost B	Won A	Won C

To this table we add the information that more teams lost both matches and get:

		Stage 1			Stage 2	
	Team	1	2	3	4	5
3	A	Won D	Won B	Won C	Lost E	Lost F
2	D	Lost A	Won C	Won F	Lost E	Lost B
4	E	Lost B	Won C	Won F	Won A	Won D
4	B	Lost A	Won E	Won F	Won C	Won D
0	C	Lost D	Lost E	Lost A	Lost B	Lost F
2	F	Lost D	Lost E	Lost B	Won A	Won C

- The answer can be now read off from the table:
14. B, E & F
 15. D & F won 2 matches.
 16. B & E with 4 wins, won the maximum number of matches.
 17. E & F defeated A.

Solutions for Questions 18–20

18. The minimum aggregate marks required to get at least 2 calls is 175 (as there are exactly 2 colleges namely college 2 & college 3 below 175).
If we allocate 50 mark each to sections A, B & C & 25 marks to sections D, a student with an aggregate of 175 marks would get 2 calls (from college 2 & 3).
19. 50 in section A + 50 in Section B + 41 in Section C + 43 in section D = 184 marks but no calls as each of the 6 colleges would reject the student.
20. To get a call from all colleges, Bhama should clear all sectional cut-offs & also aggregate cut-off. Thus, 45 + 45 + 46 + 45 = 181 satisfies this condition.
Note: You cannot get calls from all colleges at 180 & 176 & while you can get calls from all colleges at 184 & 196, we are looking for the least value which is 181.
21. Option (c) best concludes the paragraph as it shows us exactly what Perowne is thinking. Hence, option (c) is the correct answer.
22. Option (d) is the most logical conclusion of the discussion of the paragraph, and also its central idea. Hence, option (d) is the correct answer.
23. Option (a) best concludes the paragraph. Hence, option (a) is correct answer.
24. Option (e) best fits the paragraph by completing the argument. Hence, option (e) is the correct answer.

1. Suppose you have a currency, named Miso, in three denominations: 1 Miso, 10 Misos and 50 Misos. In how many ways can you pay a bill of 107 Misos?
(a) 17 (b) 16
(c) 18 (d) 15
(e) 19
2. A confused bank teller transposed the rupees and paise when he cashed a cheque for Shailaja, giving her rupees instead of paise and paise instead of rupees. After buying a toffee for 50 paise, Shailaja noticed that she was left with exactly three times as much as the amount on the cheque. Which of the following is a valid statement about the cheque amount?
(a) Over Rupees 13 but less than Rupees 14
(b) Over Rupees 7 but less than Rupees 8
(c) Over Rupees 22 but less than Rupees 23
(d) Over Rupees 18 but less than Rupees 19
(e) Over Rupees 4 but less than Rupees 5

Directions for Questions 3 and 4: Shabnam is considering three alternatives to invest her surplus cash for a week. She wishes to guarantee maximum returns on her investment. She has three options, each of which can be utilised fully or partially in conjunction with others.

Option A: Invest in a public sector bank. It promises a return of +0.10%.

Option B: Invest in mutual funds of ABC Ltd. A rise in the stock market will result in a return of +5%, while a fall will entail a return of -3%.

Option C: Invest in mutual funds of CBA Ltd. A rise in the stock market will result in a return of -2.5%, while a fall will entail a return of +2%.

3. The maximum guaranteed return to Shabnam is

(a) 0.25%	(b) 0.10%
(c) 0.20%	(d) 0.15%
(e) 0.30%	

4. What strategy will maximise the guaranteed return to Shabnam?
- (a) 100% in option A
 - (b) 36% in option B and 64% in option C
 - (c) 64% in option B and 36% in option C
 - (d) 1/3rd in each of the three options
 - (e) 30% in option A, 32% in option B and 38% in option.

Directions for Questions 5–8: Each question is followed by two statements, A and B. Answer each question using the following instructions:

- Mark (a)** if the question can be answered by using statement A alone but not by using statement B alone.
- Mark (b)** if the question can be answered by using statement B alone but not by using statement A alone.
- Mark (c)** if the question can be answered by using either of the statements alone.
- Mark (d)** if the question can be answered by using both the statements together but not by either of the statements alone.
- Mark (e)** if the question cannot be answered on the basis of the two statements.

5. In a particular school, sixty students were athletes. Ten among them were also among the top academic performers. How many top academic performers were in the school?
- A. Sixty per cent of the top academic performers were not athletes.
 - B. All the top academic performers were not necessarily athletes.
6. Five students Atul, Bala, Chetan, Dev and Ernesto were the only ones who participated in a quiz contest. They were ranked based on their scores in the contest. Dev got a higher rank as compared to Ernesto, while Bala got a higher rank as compared to Chetan. Chetan's rank was lower than the median. Who among the five got the highest rank?
- A. Atul was the last rank holder.
 - B. Bala was not among the top two rank holders.
7. Thirty per cent of the employees of a call centre are males. Ten per cent of the female employees have an engineering background. What is the percentage of male employees with engineering background?
- A. Twenty five per cent of the employees have engineering background.
 - B. Number of male employees having an engineering background is 20% more than the number of female employees having an engineering background.
8. In a football match, at half-time, Mahindra and Mahindra Club was trailing by three goals. Did it win the match?

- A. In the second-half Mahindra and Mahindra Club scored four goals.
- B. The opponent scored four goals in the match.

Directions for Questions 9–13: Answer the following questions based on the information given below:

A low-cost airline company connects ten Indian cities, A to J. The table below gives the distance between a pair of airports and the corresponding price charged by the company. Travel is permitted only from a departure airport to an arrival airport. The customers do not travel by a route where they have to stop at more than two intermediate airports.

Sector No.	Airport of Departure	Airport of Arrival	Distance between the Airports (km)	Price (`)
1	A	B	560	670
2	A	C	790	1350
3	A	D	850	1250
4	A	E	1245	1600
5	A	F	1345	1700
6	A	G	1350	2450
7	A	H	1950	1850
8	B	C	1650	2000
9	B	H	1750	1900
10	B	I	2100	2450
11	B	J	2300	2275
12	C	D	460	450
13	C	F	410	430
14	C	G	910	1100
15	D	E	540	590
16	D	F	625	700
17	D	G	640	750
18	D	H	950	1250
19	D	J	1650	2450
20	E	F	1250	1700
21	E	G	970	1150

22	E	H	850	875
23	F	G	900	1050
24	F	I	875	950
25	F	J	970	1150
26	G	I	510	550
27	G	J	830	890
28	H	I	790	970
29	H	J	400	425
30	I	J	460	540

9. What is the lowest price, in rupees, a passenger has to pay for travelling by the shortest route from A to J?
- (a) 2275 (b) 2850
(c) 2890 (d) 2930
(e) 3340
10. The company plans to introduce a direct flight between A and J. The market research results indicate that all its existing passengers travelling between A and J will use this direct flight if it is priced 5% below the minimum price that they pay at present. What should the company charge approximately, in rupees, for this direct flight?
- (a) 1991 (b) 2161
(c) 2707 (d) 2745
(e) 2783
11. If the airports C, D and H are closed down owing to security reasons, what would be the minimum price, in rupees, to be paid by a passenger travelling from A to J?
- (a) 2275 (b) 2615
(c) 2850 (d) 2945
(e) 3190
12. If the prices include a margin of 10% over the total cost that the company incurs, what is the minimum cost per kilometer that the company incurs in flying from A to J?
- (a) 0.77 (b) 0.88
(c) 0.99 (d) 1.06
(e) 1.08
13. If the prices include a margin of 15% over the total cost that the company incurs, which among the following is the distance to be covered in flying from A to J that minimises the total cost

per kilometer for the company?

(a) 2170

(b) 2180

(c) 2315

(d) 2350

(e) 2390

Directions for Questions 14–16: Each of the following questions has a paragraph from which the last sentence has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

14. Characters are also part of deep structure. Characters tie events in a story together and provide a thread of continuity and meaning. Stories can be about individuals, groups, projects, or whole organisations, so from an organisational studies perspective, the focal actor(s) determine the level and unit of analysis used in a study. Stories of mergers and acquisitions, for example, are commonplace. In these stories whole organisations are personified as actors. But these macro-level stories usually are not told from the perspective of the macro-level participants, because whole organisations cannot narrate their experiences in the first person.
- (a) More generally, data concerning the identities and relationships of the characters in the story are required, if one is to understand role structure and social networks in, which that process is embedded.
 - (b) Personification of a whole organisation abstracts away from the particular actors and from traditional notions of level of analysis.
 - (c) The personification of a whole organisation is important because stories differ depending on who is enacting various events.
 - (d) Every story is told from a particular point of view, with a particular narrative voice, which is not regarded as part of the deep structure.
 - (e) The personification of a whole organisation is a textual device we use to make macro-level theories more comprehensible.
15. Nevertheless, photographs still retain some of the magical allure that the earliest daguerreotypes inspired. As objects, our photographs have changed; they have become physically flimsier as they have become more technologically sophisticated. Daguerre produced pictures on copper plates; today many of our photographs never become tangible things, but instead remain filed away on computers and cameras, part of the digital ether that envelops the modern world. At the same time, our patience for the creation of images has also eroded. Children today are used to being tracked from birth by digital cameras and video recorders and they expect to see the results of their poses and performances instantly. The space between life as it is being lived and life as it is being displayed shrinks to a mere second.
- (a) Yet, despite these technical developments, photographs still remain powerful because they are reminders of the people and things we care about.
 - (b) Images, after all, are surrogates carried into battle by a soldier or by a traveller on holiday.
 - (c) Photographs, be they digital or traditional, exist to remind us of the absent, the beloved,

and the dead.

- (d) In the new era of the digital image, the images also have a greater potential for fostering falsehood and trickery, perpetuating fictions that seem so real we cannot tell the difference.
- (e) Anyway, human nature being what it is, little time has passed after photography's invention became means of living life through images.
16. Mma Ramotswe had a detective agency in Africa, at the foot of Kgale Hill. These were its assets: a tiny white van, two desks, two chairs, a telephone, and an old typewriter. Then there was a teapot, in which Mma Ramotswe – the only private lady detective in Botswana – brewed red bush tea. And three mugs – one for herself, one for her secretary, and one for the client. What else does a detective agency really need? Detective agencies rely on human intuition and intelligence, both of which Mma Ramotswe had in abundance.
- (a) But there was also the view, which again would appear on no inventory.
- (b) No inventory would ever include those, of course.
- (c) She had an intelligent secretary too.
- (d) She was a good detective and a good woman.
- (e) What she lacked in possessions was more than made up by a natural shrewdness.

Answer Key

1. (c)	2. (d)	3. (c)	4. (b)
5. (a)	6. (d)	7. (c)	8. (e)
9. (d)	10. (b)	11. (c)	12. (b)
13. (d)	14. (e)	15. (a)	16. (b)

Solutions:

1. Thought Process:

Deduction 1: If you were to use 2, 50 miso notes, you can only pay the remaining 7 misos through 1 miso notes.

Deduction 2: If you were to use only 1, 50 miso note, you could use 10 miso notes in 6 different ways (from 0 to 5).

Deduction 3: If you were to use no 50 miso notes, you could use 10 miso notes in 11 different ways (from 0 to 10).

Hence, the required answer is $1 + 6 + 11 = 18$.

Maximum solution time: 45 seconds.

2. Thought Process:

Question Interpretation: The solution language for this question, requires you to think about what possible amount could be such that when it's rupees and paise value are interchanged,

the resultant value is 50 paise more than thrice the original amount.

Option checking process:

Armed with this logic, suppose we were to check for option (a) i.e. The value is above ` 22 but below ` 23. This essentially means that the amount must be approximately between ` 22.66 to ` 22.69. (We get the paise amount to be between 66 to 69 based on the fact that the relationship between the Actual Amount, x and the transposed amount y is: $y - 50 \text{ paise} = 3x$. Hence, values below 22.66 and values above 22.70 are not possible.

Æ From this point onwards we just have to check whether this relationship is satisfied by any of the values between ` 22.66 to ` 22.69.

Æ Also, realise the fact that in each of these cases the paise value in the value of the transposed amount y would be 22. Thus, $3x$ should give us the paise value as 72. (since we have to subtract 50 paise from the value of 'y' in order to get the value of $3x$).

Æ This also means that the unit digit of the paise value of $3x$ should be 2.

Æ It can be clearly seen that none of the numbers 66, 67, 68 or 69 when multiplied by 3 give us a units digit of 2. Hence, this is not a possible answer.

Checking for option (d) in the same fashion:

You should realise that the outer limit for the range of values when the amount is between 18 and 19 is: 18.54 to 18.57. Also, the number of paise in the value of the transposed sum 'y' would be 18. Hence, the value of $3x$ should give us a paise value as 68 paise. Again, using the units digit principle, it is clear that the only value where the units digit would be 8 would be for a value of 18.56.

Hence, we check for the cheque amount to be 18.56. Transposition of the Rupee and paise value would give us 56.18. When you subtract 50 paise from this you would get 55.68 which also happens to be thrice 18.56. Hence, the correct answer is Option (d).

Notice here that if you can work out this logic in your reactions, the time required to check each option would be not more than 30 seconds. Hence, the net problem solving time to get the second option as correct would not be more than 1 minute. Add the reading time and this problem should still not require more than 2 minutes.

Solutions to Questions 3 and 4:

To solve this question, proceed from Question 4.

Note: This is a very common structure used in the CAT (and we just saw it in the previous question), where you have a set of 2 questions and starting from the second has a lot of advantages.

Question 4 asks us to identify the investment scheme that would give us the maximum value of the minimum guaranteed return. For this purpose we need to see the minimum return which each investment ratio is giving us and compare this across different options. **Note:** The minimum guaranteed return would be the least return to be expected in the worst case scenario for a particular investment ratio.

Although the amount of working in this question might seem to be high, you should realise that the value of the minimum guaranteed return which we would discover through this question would also answer the previous question for us. Thus, we are playing for 8 marks when we are solving this

question. The following thought process ensues:

- (1) 100% in option A—Return 0.1%
- (2) 36% in option B and 64% in option C—

If stock market rises:

$$\text{Return} = 0.05 \times 36 - 0.025 \times 64 = 36/20 - 64/40 = 1.8 - 1.6 = 0.2\%$$

If stock market falls:

$$\text{Return} = -0.03 \times 36 + 0.02 \times 64 = 1.28 - 1.08 = 0.2\%$$

Thus in both cases the minimum guaranteed return is 0.2% for this option. (The lower value has to be taken.)

- (3) 64% in option B and 36% in option C

If stock market rises:

$$\text{Return} = 0.05 \times 64 - 0.025 \times 36 = 64/20 - 36/40 = 3.2 - 0.9 = 2.3\%$$

If stock market falls:

$$\text{Return} = -0.03 \times 64 + 0.02 \times 36 = 0.72 - 1.92 = -1.2\%$$

Thus for this case, the minimum guaranteed return is negative at -1.2%.

- (4) 1/3 in each of the three options

If stock market rises:

$\text{Return} = 0.05 \times 33.33 + 0.001 \times 33.33 - 0.025 \times 33.33$ = The return is less than 0.2% (can be seen without calculating—with a little bit of weighted average thinking.) Since this value is less than 0.2% even if the next value were higher than 0.2% it would not raise the minimum guaranteed return in this case to over 0.2%. Hence, this option will not give the maximum value of the minimum guaranteed return.

- (5) 30% in option A, 32% in option B and 38% in option C

If stock market rises:

$$\text{Return} = 0.001 \times 30 + 0.05 \times 32 - 0.025 \times 38 = 0.03 + 1.6 - 0.95 = 0.68$$

If stock market falls:

$$\text{Return} = 0.001 \times 30 - 0.03 \times 32 + 0.02 \times 38 = 0.03 + 0.76 - 0.96 = \text{negative return}$$

Thus option (b) is the correct answer.

From Q.4 we also get the answer to question 3 as the value of the minimum guaranteed return is 0.2% (as seen in option (b) of Question 4).

5. In a particular school, sixty students were athletes. Ten among them were also among the top academic performers. How many top academic performers were in the school?

A. Sixty per cent of the top academic performers were not athletes.

Reaction: Since 60% of the top academic performers were not athletes, it means that 40% were athletes. We also know that this number was 10. Thus we can find the number of top academic performers as (athletes + non-athletes. Thus A alone is sufficient.)

B. All the top academic performers were not necessarily athletes.

Reaction: We cannot solve this only on the basis of statement B as it gives no additional

info to find the number of top academic performers. Thus we mark option (a) as the correct answer.

6. Five students Atul, Bala, Chetan, Dev and Ernesto were the only ones who participated in a quiz contest. They were ranked based on their scores in the contest. Dev got a higher rank as compared to Ernesto, (**Reaction: Dev > Ernesto**) while Bala got a higher rank as compared to Chetan (**Reaction: Bala > Chetan**). Chetan's rank was lower than the median (**(Reaction: Chetan was 4th or 5th)**). Who among the five got the highest rank?

A. Atul was the last rank holder.

Reaction: This means that Chetan was fourth. Then the first three ranks can be divided amongst Bala, Dev and Ernesto with the condition that Dev was greater than Ernesto. However, this gives us the following possibilities $B > D > E > C > A$ or $D > B > E > C > A$ or even $D > E > B > C > A$. If you look at what is possible both B and D can come first, which means that we cannot uniquely answer the question on the basis of statement A alone.

B. Bala was not among the top two rank holders.

Reaction: Alone this means nothing as it gives multiple possibilities for the first rank—as either Atul or Dev can get the first rank in this case.

When we use both statements however, if we were to apply this bit of information to the deductions we got from statement A, it is evident that Bala cannot be amongst the first two. Based on this, on the three possibilities available in the analysis of statement A, it is clear that only $D > E > B > C > A$ remains. Thus, Dev becomes the topper in this case and we get it when we use both the statements.

We mark Option (d) as the correct answer.

7. Thirty per cent of the employees of a call centre are males. Ten per cent of the female employees have an engineering background. (**Reaction: 7% of the total are female and engineers**). What is the percentage of male employees with engineering background?

A. Twenty five per cent of the employees have engineering background.

(**Reaction:** Since we know that of the total there are 7% female engineers, there must be 18% male engineers out of total 30% males. This means that $18/30 = 60\%$ of the males are engineers. Thus statement A alone is sufficient.

B. Number of male employees having an engineering background is 20% more than the number of female employees having an engineering background.

Reaction: This means that out of 100, if there are 7 people who are females and engineers, then there must be 8.4 who are male and engineers. Thus, out of 30 male employees there are 8.4 who are engineers. This gives us a unique answer to the question asked and hence statement B alone is also sufficient.

Since the question can be answered by either statement A or statement B, we mark option (c) as the answer.

8. In a football match, at the half-time, Mahindra and Mahindra Club was trailing by three goals. Did it win the match?

A. In the second-half Mahindra and Mahindra Club scored four goals. (**Reaction:** Whether

they won or not cannot be answered as it also depends on how many goals the opponent scored in the second half.)

- B. The opponent scored four goals in the match.

Reaction: Obviously by itself statement B gives no answer.

We now consider both statements together. There can be two scenarios here: If the first half score was 3-0 against Mahindra and Mahindra, then the match would end in a 4-4 draw. So the answer to the question asked ‘did it win the match’ in this case is ‘no’. On the other hand if the first half score was 4-1 then Mahindra and Mahindra would win 5-4. The answer to the question asked is now ‘yes’. Thus we don’t have definite conclusion about whether Mahindra and Mahindra won the match. Hence, we mark option (e) as the correct answer.

Solutions for Questions 9–13:

Reaction: This type of question only requires a calm and concentrated mind to solve because the questions are solved by interpreting the table and using basic addition and subtraction skills.

The first reaction while looking at the table should be to create a table with different routes, distances and prices from city A to city J keeping in mind that the customer does not travel by a route that has more than two intermediate airports. For example, Route A Æ B Æ J: the total distance is (560 + 2300 = 2860) and price is (670 + 2275 = 2945). Similarly, all routes can be tabulated as:

Route	Distance (km)	Price (Rs)
ABJ	2860	2945
ABHJ	2710	2995
ABIJ	3120	3660
ACDJ	2900	4250
ACFJ	2170	2930
ACGJ	2530	3340
ADJ	2500	3700
ADFJ	2445	3100
ADGJ	2320	3290
ADHJ	2200	2925
AEFJ	3465	4450
AEGJ	3045	3640
AEHJ	2495	2900

AFJ	2315	2850
AFGJ	3075	3640
AFIJ	2680	3190
AGJ	2180	3340
AGIJ	2320	3540
AHJ	2350	2275
AHIJ	3200	3360

After the table is created the solution to every question can be derived in minimum time and maximum accuracy.

9. The shortest route for A Æ J is clearly A Æ C Æ F Æ J, with a total distance of 2170. And the price of travel is ` 2930. Hence, correct option choice is option (d).
10. The lowest price for A Æ J is ` 2275 in route A Æ H Æ J. Hence calculating 5% decrease on the lowest price gives us the answer of 2161 approx. Hence the correct option is option (b).
11. If airports C, D and H are shutdown then the minimum price paid by the passenger will be or route A Æ F Æ J which is ` 2850. Hence correct option is option (c).
12. The 2350 distance has the minimum price of all routes so calculating the cost for this option gives the minimum cost per kilometre for the company. Hence option (b) is correct.
13. The solution can be given by calculating the margin of 15% and deducting it from the price to calculate the total cost. Look at the options, option (d) 2350 has the minimum price of all routes so calculating the cost we get option (d) as the correct choice.
14. In the last line of the paragraph the writer is discussing organisation and macro level players and we have to carry the idea forward. He has just stated the limitation of the personification of organisations—that they cannot narrate their experience in the first person. So the concluding statement has to conclude the idea of the usefulness of personification of organisations. Options (e) complete the paragraph in the best manner by defining the personification of a whole organisation as a textual device. Hence, option (e) is the correct answer.
15. In the first line of the paragraph, the writer gives a conclusion. So option (a) is the correct answer.

Then he discusses various changes in technology, only to reaffirm the conclusion in the last line. Options (b) and (c) can be attached to the paragraph's idea. Option (d) introduces a new line of thinking about falsehood and trickery and option (e) is irrelevant.

Hence, option (a) is the correct answer.

16. Option (b) is the best conclusion as the whole paragraph talks about inventories. Hence, option (b) is the correct answer.

Answer Questions 1–5 on the basis of the information given below:

Mathematicians are assigned a number called Erdos number (named after the famous mathematician, Paul Erdos). Only Paul Erdos himself has an Erdos number of zero. Any mathematician who has written a research paper with Erdos has an Erdos number of 1. For other mathematicians, the calculation of his/her Erdos number is illustrated below:

Suppose that a mathematician X has co-authored papers with several other mathematicians. 'From among them, mathematician Y has the smallest Erdos number. Let the Erdos number of Y be y . Then X has an Erdos number of $y + 1$. Hence any mathematician with no co-authorship chain connected to Erdos has an Erdos number of infinity.

In a seven day long mini-conference organised in memory of Paul Erdos, a close group of eight mathematicians, call them A, B, C, D, E, F, G and H , discussed some research problems. At the beginning of the conference, A was the only participant who had an infinite Erdos number. Nobody had an Erdos number less than that of F .

On the third day of the conference, F co-authored a paper jointly with A and C . This reduced the average Erdos number of the group of eight mathematicians to 3. The Erdos numbers of B, D, E, G and H remained unchanged with the writing of this paper. Further, no other co-authorship among any three members would have reduced the average Erdos number of the group of eight to as low as 3.

- At the end of the third day, five members of this group had identical Erdos numbers while the other three had Erdos numbers distinct from each other.
 - On the fifth day, E co-authored a paper with F which reduced the group's average Erdos number by 0.5. The Erdos numbers of the remaining six were unchanged with the writing of this paper.
 - No other paper was written during the conference.
1. The person having the largest Erdos number at the end of the conference must have had an Erdos number (at that time):

(a) 5

(b) 7

- (c) 9 (d) 14
- (e) 15
2. How many participants in the conference did not change their Erdos number during the conference?
- (a) 2 (b) 3
- (c) 4 (d) 5
- (e) Cannot be determined
3. The Erdos number of C at the end of the conference was:
- (a) 1 (b) 2
- (c) 3 (d) 4
- (e) 5
4. The Erdos number of E at the beginning of the conference was:
- (a) 2 (b) 5
- (c) 6 (d) 7
- (e) 8
5. How many participants had the same Erdos number at the beginning of the conference?
- (a) 2 (b) 3
- (c) 4 (d) 5
- (e) Cannot be determined

Answer Questions 6–10 on the basis of the information given below:

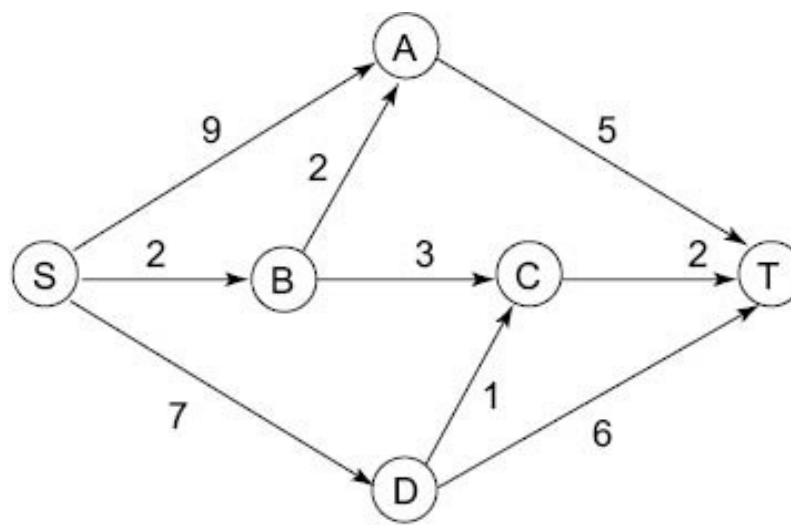
Two traders, Chetan and Michael, were involved in the buying and selling of MCS shares over five trading days. At the beginning of the first day, the MCS share was priced at ` 100, while at the end of the fifth day it was priced at ` 110. At the end of each day, the MCS share price either went up by ` 10, or else, it came down by ` 10. Both Chetan and Michael took buying and selling decisions at the end of each trading day. The beginning price of MCS share on a given day was the same as the ending price of the previous day. Chetan and Michael started with the same number of shares and amount of cash, and had enough of both. Below are some additional facts about how Chetan and Michael traded over the five trading days.

- Each day if the price went up, Chetan sold 10 shares of MCS at the closing price. On the other hand, each day if the price went down, he bought 10 shares at the closing price.
 - If on any day, the closing price was above ` 110, then Michael sold 10 shares of MCS, while if it was below ` 90, he bought 10 shares, all at the closing price.
6. If Chetan sold 10 shares of MCS on three consecutive days, while Michael sold 10 shares only once during the five days, what was the price of MCS at the end of day 3?
- (a) ` 90 (b) ` 100
- (c) ` 110 (d) ` 120

- (e) ₹ 130
7. If Michael ended up with ₹ 100 less cash than Chetan at the end of day 5, what was the difference in the number of shares possessed by Michael and Chetan (at the end of day 5)?
- (a) Michael had 10 less shares than Chetan.
 (b) Michael had 10 more shares than Chetan.
 (c) Chetan had 10 more shares than Michael.
 (d) Chetan had 20 more shares than Michael.
 (e) Both had the same number of shares.
8. If Chetan ended up with ₹ 1300 more cash than Michael at the end of day 5, what was the price of MCS share at the end of day 4?
- (a) ₹ 90 (b) ₹ 100
 (c) ₹ 110 (d) ₹ 120
 (e) Not uniquely determinable
9. What could have been the maximum possible increase in combined cash balance of Chetan and Michael at the end of the fifth day?
- (a) ₹ 3700 (b) ₹ 4000
 (c) ₹ 4700 (d) ₹ 5000
 (e) ₹ 6000
10. If Michael ended up with 20 more shares than Chetan at the end of day 5, what was the price of the share at the end of day 3?
- (a) ₹ 90 (b) ₹ 100
 (c) ₹ 110 (d) ₹ 120
 (e) ₹ 130

Answer Questions 11–15 on the basis of the information given below:

A significant amount of traffic flows from point S to point T in the one-way street network shown below. Points A , B , C and D are junctions in the network, and the arrows mark the direction of traffic flow. The fuel cost in rupees for travelling along a street is indicated by the number adjacent to the arrow representing the street.



Motorists travelling from point S to point T would obviously take the route for which the total cost of traveling is the minimum. If two or more routes have the same least travel cost, then motorists are indifferent between them. Hence, the traffic gets evenly distributed among all the least cost routes.

The government can control the flow of traffic only by levying appropriate toll at each junction. For example, if a motorist takes the route $S-A-T$ (using junction A alone), then the total cost of travel would be ` 14 (i.e., ` 9 + ` 5) plus the toll charged at junction A .

11. If the government wants to ensure that all motorists travelling from S to T pay the same amount (fuel costs and toll combined) regardless of the route they choose and the street from B to C is under repairs (and hence unusable), then a feasible set of toll charged (in rupees) at junctions A , B , C and D respectively to achieve this goal is:

(a) 2, 5, 3, 2	(b) 0, 5, 3, 1
(c) 1, 5, 3, 2	(d) 2, 3, 5, 1
(e) 1, 3, 5, 1	
12. If the government wants to ensure that no traffic flows on the street from D to T , while equal amount of traffic flows through junctions A and C , then a feasible set of toll charged (in rupees) at junctions A , B , C and D respectively to achieve this goal is:

(a) 1, 5, 3, 3	(b) 1, 4, 4, 3
(c) 1, 5, 4, 2	(d) 0, 5, 2, 3
(e) 0, 5, 2, 2	
13. If the government wants to ensure that all routes from S to T get the same amount of traffic, then a feasible set of toll charged (in rupees) at junctions A , B , C , and D respectively to achieve this goal is:

(a) 0, 5, 2, 2	(b) 0, 5, 4, 1
(c) 1, 5, 3, 3	(d) 1, 5, 3, 1
(e) 1, 5, 3, 2	
14. If the government wants to ensure that the traffic at S gets evenly distributed along streets from S to A , from S to B , and from S to D , then a feasible set of toll charged (in rupees) at junctions

A , B , C and D respectively to achieve this goal is:

(a) 0, 5, 4, 1	(b) 0, 5, 2, 2
(c) 1, 5, 3, 3	(d) 1, 5, 3, 2
(e) 0, 4, 3, 2	

15. The government wants to devise a toll policy such that the total cost to the commuters per trip is minimised. The policy should also ensure that not more than 70 per cent of the total traffic passes through junction B . The cost incurred by the commuter travelling from point S to point T under this policy will be:

(a) ` 7	(b) ` 9
(c) ` 10	(d) ` 13
(e) ` 14	

Answer Questions 16–20 on the basis of the information given below:

K , L , M , N , P , Q , R , S , U and W are the only ten members in a department. There is a proposal to form a team from within the members of the department, subject to the following conditions:

- A team must include exactly one among P , R and S .
- A team must include either M or Q , but not both.
- If a team includes K , then it must also include L , and vice versa.
- If a team includes one amongst S , U and W , then it must also include the other two.
- L and N cannot be members of the same team.
- L and U cannot be members of the same team.

The size of a team is defined as the number of members in the team.

16. What could be the size of a team that includes K ?

(a) 2 or 3	(b) 2 or 4
(c) 3 or 4	(d) Only 2
(e) Only 4	

17. In how many ways a team can be constituted so that the team includes N ?

(a) 2	(b) 3
(c) 4	(d) 5
(e) 6	

18. What would be the size of the largest possible team?

(a) 8	(b) 7
(c) 6	(d) 5
(e) Cannot be determined	

19. Who can be a member of a team of size 5?

(a) K

(b) L

(c) M

(d) P

(e) R

20. Who cannot be a member of a team of size 3?

(a) L

(b) M

(c) N

(d) P

(e) Q

Directions for Questions 21 to 25: Each question has a set of four sequentially ordered statements. Each statement can be classified as one of the following:

Facts, which deal with pieces of information that one has heard, seen or read, and which are open to discovery or verification (the answer option indicates such a statement with an '*F*').

Inferences, which are conclusions drawn about the unknown, on the basis of the known (the answer option indicates such a statement with an '*I*').

Judgements which are opinions that imply approval or disapproval of persons, objects, situations and occurrences in the past, the present or the future (the answer option indicates such a statement with a '*J*').

Select the answer option that best describes the set of four statements.

21.

1. So much of our day-to-day focus seems to be on getting things done, trudging our way through the tasks of living; it can feel like a treadmill that gets you nowhere; where is the childlike joy?
2. We are not doing the things that make us happy; that which brings us joy; the things that we cannot wait to do because we enjoy them so much.
3. This is the stuff that joyful living is made of—identifying your calling and committing yourself wholeheartedly to it.
4. When this happens, each moment becomes a celebration of you; there is a rush of energy that comes with feeling completely immersed in doing what you love most.

(a) IIIJ

(b) IFIJ

(c) JFJJ

(d) JJJJ

(e) JFII

22.

1. Given the poor quality of service in the public sector, the HIV/AIDS affected should be switching to private initiatives that supply anti-retroviral drugs (ARVs) at a low cost.
2. The government has been supplying free drugs since 2004, and up to now 35000 have benefited, though the size of the affected population is 150 times this number.
3. The recent initiatives of networks and companies like AIDS Care Network, Emcure

Reliance-Cipla-CII, would lead to availability of much-needed drugs to a larger number of affected people.

4. But how ironic it is that we should face a perennial shortage of drugs when India is one of the world's largest suppliers of generic drugs to the developing world.

(a) JFIJ	(b) JIIJ
(c) IFIJ	(d) IFFJ
(e) JFII	

23.

1. According to all statistical indications, the Sarva Shiksha Abhiyan has managed to keep pace with its ambitious goals.
2. The Mid-day Meal Scheme has been a significant incentive for the poor to send their little ones to school, thus establishing the vital link between healthy bodies and healthy minds.
3. Only about 13 million children in the age group of 6 to 14 years are out of school.
4. The goal of universalisation of elementary education has to be a pre-requisite for the evolution and development of our country.

(a) IIFJ	(b) JIIJ
(c) IJFJ	(d) IJFI
(e) JIFT	

24.

1. We should not be hopelessly addicted to an erroneous belief that corruption in India is caused by the crookedness of Indians.
2. The truth is that we have more red tape—we take eighty-nine days to start a small business, Australians take two.
3. Red tape leads to corruption and distorts people's character.
4. Every red tape procedure is a point of contact with an official, and such contacts have the potential to become opportunities for money to change hands.

(a) JFIF	(b) JFJJ
(c) JIJF	(d) IFJF
(e) JFJI	

25.

1. Inequitable distribution of all kinds of resources is certainly one of the strongest and most sinister sources of conflict.
2. Even without war, we know that conflicts continue to trouble us—they only change in character.
3. Extensive disarmament is the only insurance for our future; imagine the amount of

resources that can be released and redeployed.

4. The economies of the industrialised western world derive 20% of their income from the sale of all kinds of arms.

(a) IJJI	(b) JIM
(c) IIJF	(d) JIIF
(e) IJIF	

Directions for Questions 26–30: Each of the following questions has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

26. I am sometimes attacked for imposing ‘rules’. Nothing could be further from the truth: I hate rules. All I do is report on how consumers react to different stimuli. I may say to a copywriter, ‘Research shows that commercials with celebrities are below average in persuading people to buy products. Are you sure you want to use a celebrity?’ Call that a rule? Or I may say to an art director, ‘Research suggests that if you set the copy in black type on a white background, more people will read it than if you set it in white type on a black background.’
- (a) Guidance based on applied research can hardly qualify as ‘rules’.
- (b) Thus, all my so called ‘rules’ are rooted in applied research.
- (c) A suggestion perhaps, but scarcely a rule.
- (d) Such principles are unavoidable if one wants to be systematic about consumer behaviour.
- (e) Fundamentally it is about consumer behaviour —not about celebrities or type settings.
27. Relations between the factory and the dealer are distant and usually strained as the factory tries to force cars on the dealers to smooth out production. Relations between the dealer and the customer are equally strained because dealers continuously adjust prices, make deals, to adjust demand with supply while maximising profits. This becomes a system marked by ‘a lack of long-term commitment’ on either side, which maximises feelings of mistrust. In order to maximise their bargaining positions, everyone holds back information—the dealer about the product and the consumer about his true desires.
- (a) As a result, ‘deal making’ becomes rampant, without concern for customer satisfaction.
- (b) As a result, inefficiencies creep into the supply chain.
- (c) As a result, everyone treats the other as an adversary, rather than as an ally.
- (d) As a result, fundamental innovations are becoming scarce in the automobile industry.
- (e) As a result, everyone loses in the long run.
28. In the evolving world order, the comparative advantage of the United States lies in its military force: Diplomacy and international law have always been regarded as annoying encumbrances, unless they can be used to advantage against an enemy. Every active player in world affairs professes to seek only peace and prefers negotiation to violence and coercion.
- (a) However, diplomacy has often been used as a mask by nations which intended to use

force.

- (b) However, when the veil is lifted, we commonly see that diplomacy is understood as a disguise for the rule of force.
 - (c) However, history has shown that many of these nations do not practice what they profess.
 - (d) However, history tells us that peace is professed by those who intend to use violence.
 - (e) However, when unmasked, such nations reveal a penchant for the use of force.
29. Age has a curvilinear relationship with the exploitation of opportunity. Initially, age will increase the likelihood that a person will exploit an entrepreneurial opportunity because people gather much of the knowledge necessary to exploit opportunities over the course of their lives, and because age provides credibility in transmitting that information to others. However, as people become older, their willingness to bear risks declines, their opportunity costs rise, and they become less receptive to new information.
- (a) As a result, people transmit more information rather than experiment with new ideas as they reach an advanced age.
 - (b) As a result, people are reluctant to experiment with new ideas as they reach an advanced age.
 - (c) As a result, only people with lower opportunity costs exploit opportunity when they reach an advanced age.
 - (d) As a result, people become reluctant to exploit entrepreneurial opportunities when they reach an advanced age.
 - (e) As a result, people depend on credibility rather than on novelty as they reach an advanced age.
30. We can usefully think of theoretical models as maps, which help us navigate unfamiliar territory. The most accurate map that it is possible to construct would be of no practical use whatsoever, for it would be an exact replica, on exactly the same scale, of the place where we were. Good maps pull out the most important features and throw away a huge amount of much less valuable information. Of course, maps can be bad as well as good-witness the attempts by medieval Europe to produce a map of the world. In the same way, a bad theory, no matter how impressive it may seem in principle, does little or nothing to help us understand a problem.
- (a) But good theories, just like good maps, are invaluable, even if they are simplified.
 - (b) But good theories, just like good maps, will never represent unfamiliar concepts in detail.
 - (c) But good theories, just like good maps, need to balance detail and feasibility of representation.
 - (d) But good theories, just like good maps, are accurate only at a certain level of abstraction.
 - (e) But good theories, just like good maps, are useful in the hands of a user who knows their limitations.
31. A group of 630 children is arranged in rows for a group photograph session. Each row contains three fewer children than the row in front of it. What number of rows is not possible?

(a) 3

(b) 4

(c) 5

(d) 6

(e) 7

32. A survey was conducted of 100 people to find out whether they had read recent issues of Golmal, a monthly magazine. The summarised information regarding readership in 3 months is given below:

Only September: 18;

September but not August: 23;

September and July: 8;

September 28;

July: 48;

July and August: 10;

none of the three months: 24.

What is the number of surveyed people who have read exactly two consecutive issues (out of the three)?

(a) 7

(b) 9

(c) 12

(d) 14

(e) 17

Answer Questions 33 and 34 on the basis of the information given below:

An airline has a certain free luggage allowance and charges for excess luggage at a fixed rate per kg. Two passengers, Raja and Praja have 60 kg of luggage between them, and are charged ` 1200 and ` 2400 respectively for excess luggage. Had the entire luggage belonged to one of them, the excess luggage charge would have been ` 5400.

33. What is the weight of Praja's luggage?

(a) 20 kg

(b) 25 kg

(c) 30 kg

(d) 35 kg

(e) 40 kg

34. What is the free luggage allowance?

(a) 10 kg

(b) 15 kg

(c) 20 kg

(d) 25kg

(e) 30kg

Answer Key

1. (b)	2. (d)	3. (b)	4. (c)
5. (b)	6. (c)	7. (e)	8. (b)
9. (d)	10. (a)	11. (b)/(c)	12. (e)
13. (e)	14. (a)	15. (c)	16. (e)
17. (e)	18. (d)	19. (c)	20. (a)
21. (d)	22. (a)	23. (c)	24. (c)
25. (b)	26. (c)	27. (e)	28. (b)
29. (d)	30. (a)	31. (d)	32. (b)
33. (d)	34. (b)		

Solutions:

Solutions for Questions 1–5:

In order to solve this question (and in fact most questions of this nature where you have a long data/info filled passage), the key is to be able to decode the language step by step. So instead of getting bogged down by the surfeit of information which you have, focus on reacting to the language of the information sentence by sentence.

So let us now go through the information sentence by sentence and see how one should react in this question:

Mathematicians are assigned a number called Erdos number (named after the famous mathematician, Paul Erdos). **[Reaction:** The question is introducing a variable called ‘Erdos Number’]. Only Paul Erdos himself has an Erdos number of zero. Any mathematician who has written a research paper with Erdos has an Erdos number of 1. For other mathematicians, the calculation of his/her Erdos number is illustrated below:

Suppose that a mathematician X has co-authored papers with several other mathematicians. ‘From among them, mathematician Y has the smallest Erdos number. Let the Erdos number of Y be y . Then X has an Erdos number of $y + 1$. Hence any mathematician with no co-authorship chain connected to Erdos has an Erdos number of infinity. **[Reaction:** We now have a process for assigning the value of the Erdos number—from the co-authors of an individual whose Erdos number you want to find, choose the co-author with the smallest Erdos number. The required Erdos number can be computed by adding 1 to this least number. A-ha point: If an individual x has a co-author list with the following Erdos numbers—2, 4, 6, 3, 8, then x would have an Erdos number of $2 + 1 = 3$, since 2 is the least value in his list of co authors.]

In a seven day long mini-conference organised in memory of Paul Erdos **[Reaction:** Paul Erdos is dead, he would not be a part of the group.], a close group of eight mathematicians, call them A, B, C, D, E, F, G and H , discussed some research problems. At the beginning of the conference, A was the only participant who had an infinite Erdos number. Nobody had an Erdos number less than that of F .

Reaction:

Person	A	B	C	D	E	F	G	H

Erdos Number	Infinite	b	c	d	e	f (least Erdos number)	g	h

Note here that ‘ f ’ is the least value but not necessarily the single such least value., i.e., there can be more than 1 person having the same number. At this point of time the only conclusion we can make is that there is nobody else with an Erdos number less than f , but that does not guarantee the fact that there cannot be anybody with a number equal to f .

On the third day of the conference F co-authored a paper jointly with A and C .

Reactions:

A ’s Erdos number would come down to $f + 1$.

For C ’s Erdos there could be three specific cases:

CASE 1: C ’s number would come down to $f + 1$ from a higher number. Obviously this would happen if C had a higher Erdos number earlier).

CASE 2: C ’s Erdos number was $f + 1$ earlier. In such a case his number would not change and would remain $f + 1$ again.

CASE 3: C ’s Erdos number was f earlier. In such a case his number would not change and remain at f .

Person	A	B	C	D	E	F	G	H
Erdos Number	$f + 1$	b	f or $f + 1$	d	e	f (least Erdos number)	g	h

This reduced the average Erdos number of the group of eight mathematicians to 3. The Erdos numbers of B , D , E , G and H remained unchanged with the writing of this paper.

Reaction:

The sum of the eight numbers must be $8 \ncong 3 = 24$.

Further, no other co-authorship among any three members would have reduced the average Erdos number of the group of eight to as low as 3.

Reaction: Since the effect of A and C co-authoring with F is to bring the average of the group to the lowest possible, this clearly means that C ’s starting Erdos number must have been the second highest amongst all the values (After A). This can be understood further by the fact that if someone other than C (say H) had the second highest Erdos number in the group initially, then the least possible average would have been got by co-authoring F with A and H .

Thus we can conclude that C must have had the second highest Erdos number in the group, in which case we can also reject Case 3 above and conclude that C ’s new Erdos number must be $f + 1$. We also know that C ’s number must have fallen to $f + 1$. It could not have been $f + 1$ earlier since, C ’s new number must represent the largest drop apart from A ’s drop in value.

Thus the table would evolve to:

Person	A	B	C	D	E	F	G	H
Erdos Number	$f + 1$	b	$f + 1$	d	e	f (least Erdos number)	g	h

- At the end of the third day, five members of this group had identical Erdos numbers while the

other three had Erdos numbers distinct from each other.

Reaction:

Since we know that A and C both have $f + 1$ as their values, it is clear from this statement that there must be 5 people having $f + 1$ as their Erdos numbers. For the other 3 there should be unique values for each of them. One of them being f , the other two should be distinct values (say m and n).

Thus, we can create the equation:

$$5(f+1) + f + m + n = 24$$

The issue now is to try to fix the value of f . If we take the value of f as 2, then the following would happen to the equation above:

$$5 \nVdash 3 + 2 + m + n = 24 \not\vdash 17 + m + n = 24.$$

We now realise that the sum of m and n (i.e., $m + n$) would be equal to 7. Also, since $f + 1$ is 3, the least values of m and n can be 4 and 5 respectively. This is not possible in this situation.

It is also easily seen that if we change the value of f , (from 2) we cannot take it further up as that would only worsen the situation. Thus, the only possibility left would be the value of f as 1.

Then the equation

$5(f+1)+f+m+n=24$, would transform to $5\mathbb{Y}2+1+m+n=24$ giving us the sum of m and n as 13.

The sum of m and n as 13 can happen through four possibilities as:

- (i) $3 + 10$,
- (ii) $4 + 9$,
- (iii) $5 + 8$ or
- (iv) $6 + 7$.

Thus the table would evolve to:

Person	A	B	C	D	E	F	G	H
Erdos Number	2	b	2	d	e	l	g	h

and we also know that amongst b, d, e, g and h three have to be equal to 2 and the remaining two would be taking the values of m and n . At this point, however, we do not know which one is which.

- On the fifth day, E co-authored a paper with F which reduced the group's average Erdos number by 0.5. The Erdos numbers of the remaining six were unchanged with the writing of this paper.

Reactions:

If E co-authors with F , E 's value would reduce to 2. Also, since the average is reducing by 0.5, it would mean that there is a drop in the total by 4. ($0.5 \times 8 = 4$). Thus, E 's value right through in each of the above tables would have been 6 and would go down to 2 after the fifth day. Thus, the value for $m + n$ which would fit would be possibility iv above.

Thus the table would evolve to:

Person	A	B	C	D	E	F	G	H
Erdos Number	2	b	2	d	2	1	g	h

Out of b, d, g and h three would have a value of 2 and one would have a value of 7.

- No other paper was written during the conference.

We are now ready to answer the questions which were asked.

1. Obviously 7. Hence option (b).
2. It would be better to look at how many changed their numbers. We know that A, C and E have changed their numbers and also that the others have not changed. Hence, the option (d) is correct.
3. C 's number at the end of the conference would be 2. Hence, option (b) is correct.
4. C 's number at the beginning of the conference would be 6. Hence, option (c) is correct.
5. After A and C 's Erdos number went down to 2, there were 5 people with the same Erdos number. Hence, before that only 3 people must have had the same Erdos number.

Let us now go through the inferences for the next question set- for questions 11 to 15.

Solutions Questions 6–10:

Two traders, Chetan and Michael, were involved in the buying and selling of MCS shares over five trading days. At the beginning of the first day, the MCS share was priced at ₹ 100, while at the end of the fifth day it was priced at ₹ 110. At the end of each day, the MCS share price either went up by ₹ 10, or else, it came down by ₹ 10.

Reaction: This clearly means that there must have been 3 increases of Rs.10 each and two drops of Rs.10 each. At this point, of course we are in no condition to comment on the order they are going to take but a little bit of permutation and combination thinking would give you that there can be ${}^5C_3 = 10$ ways of ordering the increases and the decreases.

Both Chetan and Michael took buying and selling decisions at the end of each trading day. The beginning price of MCS share on a given day was the same as the ending price of the previous day. Chetan and Michael started with the same number of shares and amount of cash, (**Reaction:** Take a note of this at this point.) and had enough of both. Below are some additional facts about how Chetan and Michael traded over the five trading days.

- Each day if the price went up, Chetan sold 10 shares of MCS at the closing price. On the other hand, each day if the price went down, he bought 10 shares at the closing price.

Reaction: Chetan must have sold 10 shares thrice and bought 10 shares twice during this period. It means that he must have been a net seller of 10 shares during this period. Obviously, this would have a positive effect on his cash balance and it would go up by around 1000 to 1200 rupees due to offloading 10 of his shares. Of course, he might gain or lose some value due to the profit/loss he might have made in other buying and selling transactions he might have made.

- If on any day, the closing price was above ₹ 110, then Michael sold 10 shares of MCS, while if it was below ₹ 90, he bought 10 shares, all at the closing price.

Reaction:

Michael's buying trigger – price of 80

Michael's selling trigger – Price of 120 or 130.

It is obvious at this point that if we consider Michael's activity, it is not possible for him to both buy and sell under any conditions. This is because, if the price hits 120 on any of the 5 days, it cannot have gone to 80 during the 5 days under consideration as we have only 2 decreases of ` 10 each in price. So from 120 the minimum level the price can reach is 100. Similarly, if the price had hit 80, it could not have gone up to 120 in the same 5 day cycle as only a maximum of 3 increases of ` 10 each are possible giving an upper limit of price reaching to 100 if it had hit 80 during the time under consideration.

Thus, if during a 5 day cycle a sell trigger is activated for Michael, then a buy trigger cannot occur in that cycle and vice versa.

Obvioulsy, we have to move directly into the questions and react to what has been written there in terms of the conditions mentioned.

6. If Chetan sold 10 shares of MCS on three consecutive days, (**Reaction:** Since Chetan sells everytime there is a price increase, this obviously means that the price must have increased on three consecutive days, i.e., the three price rises on the five days must have happened on consecutive days. These can happen in three cases:

Case 1: Price goes up on first three days and falls on fourth and fifth days—110, 120, 130, 120, 110

Case 2: Price goes up on second to fourth days and falls on the first and fifth days—90, 100, 110, 120, 110.

Case 3: Price goes up on the last three days and falls on the first two days—90, 80, 90, 100, 110) while Michael sold 10 shares only once during the five days (**Reaction:** Michael's selling trigger of ` 120 must have got activated only once in the five days under consideration. From the above reaction, it can be easily seen that this condition is fulfilled only by Case 2), what was the price of MCS at the end of day 3 (**Reaction:** In Case 2, price at the end of day 3 is 110)?

Option (c) is the correct answer.

7. If Michael ended up with ` 100 less cash than Chetan at the end of day 5, (**Reaction:** We know that Chetan is a net seller of 10 shares, so obviously we expect his cash balance to have gone up from his initial level. Now, if we further know that Michael ended up with just ` 100 cash difference from Chetan, then his cash balance would also have gone up by almost the same amount as Chetan's. This can only happen if Michael is also a net seller of overall 10 shares.) what was the difference in the number of shares possessed by Michael and Chetan (at the end of day 5) (**Reaction:** Obviously the number of shares possessed by both of them at the end of day 5 would be equal—as they started with equal amount of shares and cash at the start of the 5 day period)?

Option (e) is the correct answer. Note that this is a 100% safe thought logic to arrive at this answer. In case, you do not get it I would suggest that you try to see the cash and share balance of both under each of the 10 possible conditions of price rise and fall. You would discover that whenever there is a difference in the number of shares, the cash balance would also vary distinctly.

8. If Chetan ended up with ` 1300 more cash than Michael at the end of day 5, (**Reaction:** Since

Chetan is a net seller of 10 shares, Michael must not have sold or bought any shares. If you make Michael buy shares, the difference in the number of shares would be 20 and the difference in cash balance would be around ` 2000. On the other hand if Michael had sold shares, there would not be such a gap in the cash balance.) What was the price of MCS share at the end of day 4 (**Reaction:** Michael neither sells nor buys. So the price does not hit either 80 or 120. So on day 4, the price can only be ` 100—as if the price was 120, Michael's sell trigger would have occurred.)?

Option (b) is the correct answer. If you are not confident of your answer, try it out.

The pricing would have been:

90, 100, 110, 100, 110 (in order for Michael not to have a sell or buy trigger).

In such a case, the cash balance of Chetan would get affected thus:

Day 1: price 90, buy 10 shares, cash balance –900.

Day 2: price 100, sell 10 shares, cash balance +100,

Day 3: Price 110, sell 10 shares, cash balance +1200,

Day 4: Price 100, buy 10 shares, cash balance +200,

Day 5: Price 110, buy 10 shares, cash balance +1300.

Goes to confirm the line of thought I was talking about in the reactions to this question.

9. For maximum possible increase in cash balance, the condition that should be met is that the maximum number of shares should be sold. Since, Chetan's transactions are largely fixed in that we know definitely that he has sold 10 shares net, Michael should have sold the maximum number of shares. For this to happen the price must have been over 110 for the maximum time. This happens in the case of:

Day	1	2	3	4	5	Net effect
Price	110	120	130	120	110	
Chetan	Sells	Sells	Sells	Buys	Buys	
Effect on Chetan's cash	+1100	+1200	+1300	–1200	–1100	+1300
Michael	No action	Sells	Sells	Sells	No action	
	0	+1200	+1300	+1200	0	+3700

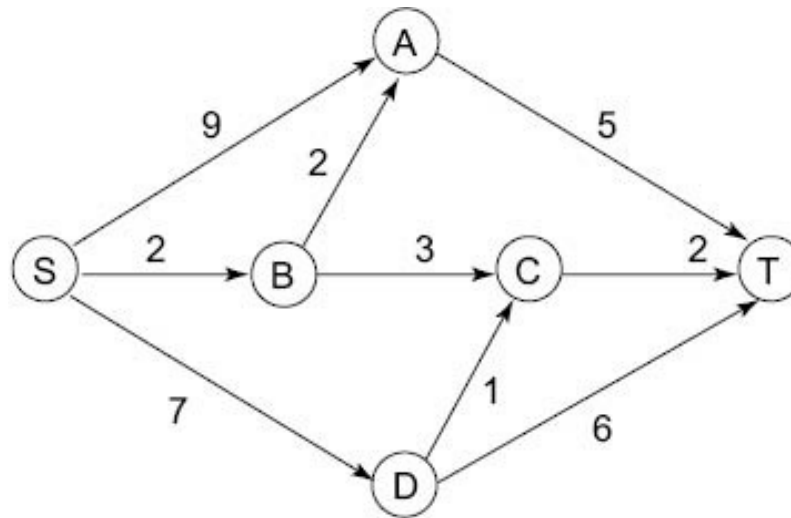
So the combined increase in cash balance is ` 5000.

10. If Michael ended up with 20 more shares than Chetan at the end of day 5, (**Reaction:** Share wise, we know that Chetan is -10, so obviously Michael must be +10 shares in order for him to have 20 more shares than Chetan. This means that Michael must have bought once. For that to happen the price of the share must have gone down to ` 80. The only way that occurs is if we take the price down on the first two days. Thus, the price string would be 90, 80, 90, 100, 110) what was the price of the share at the end of day 3 (**Reaction:** Obviously 90)?

Hence, option (a) is correct.

Solutions for Questions 11–15:

A significant amount of traffic flows from point S to point T in the one-way street network shown below. Points A , B , C and D are junctions in the network, and the arrows mark the direction of traffic flow. The fuel cost in rupees for travelling along a street is indicated by the number adjacent to the arrow representing the street.



Motorists travelling from point S to point T would obviously take the route for which the total cost of travelling is the minimum. If two or more routes have the same least travel cost, then motorists are indifferent between them. Hence, the traffic gets evenly distributed among all the least cost routes.

The government can control the flow of traffic only by levying appropriate toll at each junction. For example, if a motorist takes the route S - A - T (using junction A alone), then the total cost of travel would be ` 14 (i.e., ` 9 + ` 5) plus the toll charged at junction A .

Reaction: Routes possible are:

1. SAT—Cost $14 + A$
2. SBAT—Cost $9 + A + B$
3. SBCT—Cost $7 + B + C$
4. SDCT—Cost $10 + C + D$
5. SDT—Cost $13 + D$

11. If the government wants to ensure that all motorists travelling from S to T pay the same amount (fuel costs and toll combined) (**Reaction:** The question is asking us to fix toll charges in such a way that the total cost on all feasible routes is equal.) regardless of the route they choose and the street from B to C is under repairs (and hence unusable) (**Reaction:** Route SBCT is closed), then a feasible set of toll charged (in rupees) at junctions A , B , C and D respectively to achieve this goal is:

Reaction: To equate SDCT cost with SDT cost, C should be 3. This leaves only options (b) and (c). Checking option (b), SAT = 14, SBAT = 14, SDCT = 14 and SDT = 14 (feasible as all 4 routes' cost is equated).

Checking option (c), SAT = 15, SBAT = 15, SDCT = 15 and SDT = 15 (feasible again as all 4 routes' cost is equated). This question gives 2 answers. Mark either one and move ahead. [Note: This question was neglected from the final score calculations].

12. If the government wants to ensure that no traffic flows on the street from D to T , (**Reaction:**

SDT has to be made infeasible) while equal amount of traffic flows through junctions A and C , (**Reaction:** There are 2 routes each through A and C . In order to make an equal amount of traffic flow through each junction A and C respectively, we need to ensure either of two things: 1. All four routes SAT, SBAT, SBCT and SDCT should be the same least cost, OR 2 One route through A and one route through C should be the least cost. At the same time SDT should not be the least cost route.) then a feasible set of toll charged (in rupees) at junctions A , B , C and D respectively to achieve this goal is:

Reaction: Looking at the options, 4 of the five options give the value of B as 5. We can clearly see that if B is 5, SAT and SBAT give the same cost. In such a case, the two routes through C should also give the same least cost. Also for SBCT to be equal to SBAT, C should exceed A by 2. This occurs in option (a) and (e). From this point checking for option (a) and (e) it is evident that option (e) is the correct solution as $SAT = SBAT = SDCT = SBCT = 14$.

13. If the government wants to ensure that all routes from S to T get the same amount of traffic, then a feasible set of toll charged (in rupees) at junctions A , B , C and D respectively to achieve this goal is:

Reaction: We need to equate all 5 routes. Thus, looking at the equations for the total cost on each route we see the following:

For $SAT = SBAT$, B should be 5, (All options have this)

For $SAT = SDT$, D should be 1 more than A (Only options (b) and (e) have this)

For $SDT = SDCT$, C should be 3. Only option (e) has this.

14. If the government wants to ensure that the traffic at S gets evenly distributed along streets from S to A , from S to B , and from S to D , then a feasible set of toll charged (in rupees) at junctions A , B , C and D respectively to achieve this goal is:

Reaction: Since SA has only 1 route going through it, there should be exactly 3 least cost routes—1 each through SA , SB and SD . Further, SAT has to be one of the least cost routes. In Options (a), (b) and (e), SAT would cost 14 while in options (c) and (d), SAT would cost 15. On checking Option (a) gives:

$SAT = SBAT = SDT = 14$ while $SBCT$ (16) and SDT (15) would not be least cost routes. The traffic would get evenly distributed between SAT , $SBAT$ and SDT as required by the question.

15. The government wants to devise a toll policy such that the total cost to the commuters per trip is minimised. The policy should also ensure that not more than 70 per cent of the total traffic passes through junction B . (**Reaction:** There should be at least 1 least cost route which is not passing through B .) The cost incurred by the commuter travelling from point S to point T under this policy will be:

Reaction: The minimum cost on a route not passing through B is 10, hence options (a) and (b) are not feasible. The issue to look out for is whether we can create a total cost of 10 and have the 70% condition met.

Looking at the cost equations, it is clear that if we want $SDCT$ to cost 10 totally, C and D should be toll free. Then $SBCT$ should also cost 10 at least to share the least cost route with $SDCT$. Thus the toll at B should be 3. In such a case, $SDCT = 10 = SBCT$ and the other route

cost more than 10. Hence, the traffic would get divided 50-50 between SDCT and SBCT and 10 would represent the least cost you would need to get the value required.

Solutions for Questions 16–20:

$K, L, M, N, P, Q, R, S, U$ and W are the only ten members in a department. There is a proposal to form a team from within the members of the department, subject to the following conditions:

- A team must include exactly one among P, R and S . (**Reaction:** One amongst $P/R/S$ is compulsorily selected in every team.)
- A team must include either M or Q , but not both. (**Reaction:** One amongst M or Q is compulsory in every team)
- If a team includes K , then it must also include L , and vice versa. (**Reaction:** K and L go together; So both or neither)
- If a team includes one amongst S, U and W , then it must also include the other two. (S, U and W go together or they do not go at all.)
- L and N cannot be members of the same team. (**Reaction** $L \nexists N$)
- L and U cannot be members of the same team. (**Reaction** $L \nexists U$)

The size of a team is defined as the number of members in the team.

16. What could be the size of a team that includes K ? (**Reaction:** If K is taken, L should be taken, so N and U are not taken. If U is not taken, S and W are also rejected. Also, one from M or Q and one from P/R have to be taken. So team size can be 4. Option (e) is correct.)
17. In how many ways a team can be constituted so that the team includes N ? (**Reaction:** If N is taken, L is rejected. So K is also rejected. Then, one amongst $P/R/S$ has to be taken. This can be done in 3 ways as if we take S, U and W would automatically be selected and if we take either P or R then S, U and W automatically get rejected. Also one amongst M/Q has to be taken compulsorily. This means that there are $3 \nexists 2 = 6$ ways of making the team.)
18. What would be the size of the largest possible team? (**Reaction:** One from $M/Q, S, U$ and W , and N gives us 5 members. Note: If we select U then L and K cannot be part of the team. Option (d) is correct.)
19. Who can be a member of a team of size 5? (**Reaction:** From the previous question, it is evident that only M can be a member of a team of size 5.)
20. Who cannot be a member of a team of size 3? (**Reaction:** In a team of size 3, we cannot include either K or L as they would increase the minimum team size to 4. Thus, option (a) is correct.)

Solutions for Questions 21–25:

21. 1 is clearly a judgement as it uses unclear subject like ‘we’, ‘our’, etc and has generalised feelings so in absence of a clear subject it is a judgement. 2. This is also a judgement on the basis of the above mentioned points which are applicable to statements 3 and 4.
So the correct option is [JJJJ]. Option (d) is correct.
22. Any kind of advice which is general is a judgement, so the 1st statement is a J. The 2nd statement is a fact as it only talks about numbers and data which can be checked. The 3rd statement is an inference as it is a future projection about something on factual basis. The 4th

statement is a judgement as it again is generalised without a clear subject.

The answer is option (a) [JFIJ]

23. The 1st statement is in present continuous, indicating something that is going on and is not finished and is thus an inference. The 2nd statement is a clear judgement as it is a generalisation from a proverb which is not clearly verifiable. The 3rd statement is a fact as it has clear verifiable numbers and data. The 4th statement is a judgement as it mentions a universal goal, again a generalisation.

The answer is option (c) [IJFI].

24. The 1st statement is a judgement, the generalisation and the judgemental nature of the sentence 'crookedness of Indians'. The 2nd statement is a fact, clearly verifiable. The 3rd statement is again general and is a judgement. The 4th statement is an inference because it is a projection about a situation with no generalisation.

The answer is option (c) [JIJF]

25. The 1st statement is a judgement due to the 'wrong' mentioned. The two words 'most sinister' contributes to it. The usage of 'continuation of conflict' makes statement 2 an inference. The phrase 'the only insurance' makes the sentence 3 a judgement. The statement 4 is based on data and is thus a fact.

Option (b) [JIJF] is correct.

Solutions to Questions 26–30:

26. The author is defining his style not as a rule but mostly in the suggestive sense. So option (c) is correct.
27. The paragraph here shows a chain of negativity which is creating a situation of loss for everyone. Thus option (e) is correct.
28. The whole paragraph is in a present continuous form and so option (b) is the most accurate.
29. The focus here is about the exploitation of entrepreneurial opportunity at a later stage in life. Thus option (d) is the answer as it logically provides a conclusion for the paragraph.
30. The paragraph emphasises on the importance of simplicity in theories and maps so that they can be adjusted and applied to various situations, and yet their importance is not undermined. So option (a) is the most suitable conclusion.

31. Thought Process:

The number of people in the respective rows will form an AP with a common difference of -3 .

In this case, we have to find which number of rows is not possible. For this take it option by option.

Use the principle that for an AP the sum is given by $n \times \text{average}$.

For 3 rows: The average of the AP would be 210. And this would also be the value of the middle term (as when there are 3 rows the average of the AP is given by the middle term). We can thus form an AP of 3 terms with middle term 210 and common difference -3 . Thus it is possible to arrange the children in 3 rows.

For 4 rows: The average would be $630/4 = 157.5$. Since, there will be two middle terms in

this case—the AP can be easily formed with the middle terms as 159 and 156 (so that they average 157.5 with a common difference of -3). Thus it is possible to arrange the children in 4 rows.

For 5 rows: The average of the AP would be $630/5 = 126$. And this would also be the value of the middle term (as when there are 5 rows the average of the AP is given by the middle term). We can thus form an AP of 5 terms with middle term 126 and common difference -3 . Thus it is possible to arrange the children in 5 rows.

For 6 rows: The average would be $630/6 = 105$. Since, there will be two middle terms in this case—the AP would have to be formed with the two middle terms as 106.5 and 103.5 (so that they average 105 with a common difference of -3). Thus it is not possible to arrange the children in 6 rows as the value of the terms in the AP would not be in integers.

Maximum solution time: 45–60 seconds in case you know the principle of middle terms of an AP.

32. **Thought process:**

Total number of people surveyed: 100

Only September: 18;

September but not August: 23;

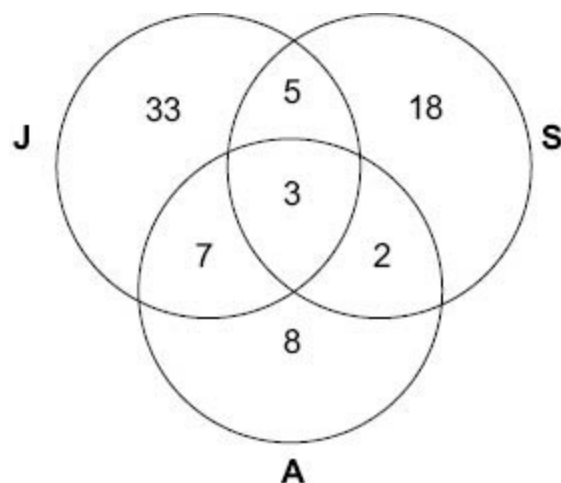
September and July: 8;

September 28;

July: 48;

July and August: 10;

None of the three months: 24.



The number of people who would have read exactly two consecutive issues would be given by the numbers who read July and August only (7) and August and September only (2). $7 + 2 = 9$.

Solutions for Questions 33 and 34:

Start from the second question. From the given information, it is clear that the extra luggage for Praja is twice the extra luggage for Raja. This means that when the two of them take their luggage separately, after reducing the free luggage from 60 kg, whatever remains has to be divided into three parts and two of them have to be carried by Praja and one by Raja.

This is because, if Raja and Praja were to both carry their luggage separately, the total free luggage would be twice the free luggage of one of them.

Also, when only one person carried the luggage, the amount of extra luggage should be 50% higher than the extra luggage when both are carrying their luggage separately.

From the options, it is clear that:

Option (a) is not possible as when both carry their luggage separately, extra luggage = 40. However, when only 1 carries all the luggage the extra luggage would be 50. But from 40 to 50 we do not have a 50% increase. Hence, the option can be rejected.

Repeat the same thought process for Option (b). 30 to 45 is a 50% increase.

Option (c): 20 to 40 not a 50% increase.

Option (d): 10 to 35 not a 50% increase.

Option (e): 0 to 30 not a 50% increase.

Obviously option (b) is correct for Question 34.

If we solve the question through equation, we get: $1.5(60 - 2x) = 60 - x \Rightarrow 2x = 30$ and thus $x = 15$.

With a free luggage allowance of 15 kgs, Raja should have had $15 + y$ and Praja $15 + 2y$ giving a total of the two as 60. Thus, $30 + 3y = 60$ gives us $y = 10$. Hence, Praja = 35 kgs. Hence, option (d) is correct.

1. Three Englishmen and three Frenchmen work for the same company. Each of them knows a secret not known to others. They need to exchange these secrets over person-to-person phone calls so that eventually each person knows all six secrets. None of the Frenchmen knows English, and only one Englishman knows French. What is the minimum number of phone calls needed for the above purpose?
(a) 5 (b) 10
(c) 9 (d) 15
2. A rectangular floor is fully covered with square tiles of identical size. The tiles on the edges are white and the tiles in the interior are red. The number of white tiles is the same as the number of red tiles. A possible value of the number of tiles along one edge of the floor is
(a) 10 (b) 12
(c) 14 (d) 16

Answer Questions 3–6 on the basis of the information given below:

In the table below is the listing of players, seeded from highest (#1) to lowest (#32), who are due to play in an Association of Tennis Players (ATP) tournament for women. This tournament has four knockout rounds before the final, i.e., first round, second round, quarter finals, and semi-finals. In the first round, the highest seeded player plays the lowest seeded player (seed # 32) which is designated match No. 1 of first round; the 2nd seeded player plays the 31st seeded player which is designated match No. 2 of the first round, and so on. Thus, for instance, match No. 16 of the first round is to be played between the 16th seeded player and the 17th seeded player. In the second round, the winner of match No. 1 of the first round plays the winner of match No. 16 of first round and is designated match No. 1 of the second round. Similarly, the winner of match No. 2 of first round plays the winner of match No. 15 of first round, and is designated match No. 2 of second round. Thus, for instance, match No. 8 of the second round is to be played between the winner of match No. 8 of the first round and the winner of match No. 9 of the first round. The same pattern is followed for later rounds as well.

Seed #	Name of Player	Seed #	Name of Player	Seed #	Name of Player
1	Maria Sharapova	12	Mary Pierce	23	Silvia Farina Elia
2	Lindsay Davenport	13	Anastasia Myskina	24	Tatiana Golovin
3	Amelie Mauresmo	14	Alicia Molik	25	Shinobu Asagoe
4	Kim Clijsters	15	Nathalie Dechy	26	Francesca Schiavone
5	Svetlana Kuznetsova	16	Elena Bovina	27	Nicole Pietrangeli
6	Elena Dementieva	17	Jelena Jankovic	28	Gisela Dulko
7	Justine Henin	18	Ana Ivanovic	29	Flavia Pennetta
8	Serena Williams	19	Vera Zvonareva	30	Anna Chakvetadze
9	Nadia Petrova	20	Elena Likhovtseva	31	Ai Sugiyama
10	Venus Williams	21	Daniela Hantuchova	32	Anna-Lena Groenefeld
11	Patty Schnyder	22	Dinara Safina		

3. If there are no upsets (a lower seeded player beating a higher seeded player) in the first round, and only match Nos. 6, 7, and 8 of the second round result in upsets, then who would meet Lindsay Davenport in the quarter finals, in case Davenport reaches the quarter finals?
 - (a) Justine Henin
 - (b) Nadia Petrova
 - (c) Patty Schnyder
 - (d) Venus Williams
4. If Elena Dementieva and Serena Williams lose in the second round, while Justine Henin and Nadia Petrova make it to the semi-finals, then who would play Maria Sharapova in the quarter finals, in the event Sharapova reaches the quarter finals?
 - (a) Dinara Safina
 - (b) Justine Henin
 - (c) Nadia Petrova
 - (d) Patty Schnyder
5. If, in the first round, all even numbered matches (and none of the odd numbered ones) result in upsets, and there are no upsets in the second round, then who could be the lowest seeded player facing Maria Sharapova in the semi-finals?
 - (a) Anastasia Myskina
 - (b) Flavia Pennetta
 - (c) Nadia Petrova
 - (d) Svetlana Kuznetsova
6. If the top eight seeds make it to the quarter finals, then who, amongst the players listed below, would definitely not play against Maria Sharapova in the final, in case Sharapova reaches the final?
 - (a) Amelie Mauresmo
 - (b) Elena Dementieva
 - (c) Kim Clijsters
 - (d) Lindsay Davenport

Answer Questions 7–10 on the basis of the information given below:

Venkat, a stockbroker, invested a part of his money in the stock of four companies—*A*, *B*, *C* and *D*. Each of these companies belonged to different industries, viz., Cement, Information Technology (IT), Auto, and Steel, in no particular order. At the time of investment, the price of each stock was ₹ 100. Venkat purchased only one stock of each of these companies. He was expecting returns of 20%, 10%, 30% and 40% from the stock of companies *A*, *B*, *C* and *D*, respectively. Returns are defined as the change in the value of the stock after one year, expressed as a percentage of the initial value. During the year, two of these companies announced extraordinarily good results. One of these two companies belonged to the Cement or the IT industry, while the other one belonged to either the Steel or the Auto industry. As a result, the returns on the stocks of these two companies were higher than the initially expected returns. For the company belonging to the Cement or the IT industry with extraordinarily good results, the returns were twice that of the initially expected returns. For the company belonging to the Steel or the Auto industry, the returns on announcement of extraordinarily good results were only one and a half times that of the initially expected returns. For the remaining two companies, which did not announce extraordinarily good results, the returns realised during the year were the same as initially expected.

7. What is the minimum average return Venkat would have earned during the year?
 - (a) 30%
 - (b) $31\frac{1}{4}\%$
 - (c) $32\frac{1}{2}\%$
 - (d) Cannot be determined
8. If Venkat earned a 35% return on average during the year, then which of these statements would necessarily be true?
 - I. Company A belonged either to the Auto or the Steel Industry.
 - II. Company B did not announce extraordinarily good results.
 - III. Company A announced extraordinarily good results.
 - IV. Company D did not announce extraordinarily good results.
 - (a) I and II only
 - (b) II and III only
 - (c) III and IV only
 - (d) II and IV only
9. If Venkat earned a 38.75% return on average during the year, then which of these statement(s) would necessarily be true?
 - I. Company C belonged either to Auto or to Steel Industry.
 - II. Company D belonged either to Auto or to Steel Industry.
 - III. Company A announced extraordinarily good results.
 - IV. Company B did not announce extraordinarily good results.
 - (a) I and II only
 - (b) II and III only
 - (c) I and IV only
 - (d) II and IV only

10. If Company C belonged to the Cement or the IT industry and did announce extraordinarily good results, then which of these statement(s) would necessarily be true?
- Venkat earned not more than 36.25% return on average.
 - Venkat earned not less than 33.75% return on average.
 - If Venkat earned 33.75% return on average, Company A announced extraordinarily good results.
 - If Venkat earned 33.75% return on average; Company B belonged either to Auto or to Steel Industry.
- I and II only
 - II and IV only
 - II and III only
 - III and IV only

Answer Questions 11–14 on the basis of the information given below:

The year is 2089. Beijing, London, New York and Paris are in contention to host the 2096 Olympics. The eventual winner is determined through several rounds of voting by members of the IOC with each member representing a different city. All the four cities in contention are also represented in IOC.

- In any round of voting, the city receiving the lowest number of votes in that round gets eliminated. The survivor after the last round of voting gets to host the event.
- A member is allowed to cast votes for at most two different cities in all rounds of voting combined. (Hence, a member becomes ineligible to cast a vote in a given round if both the cities (s)he voted for in earlier rounds are out of contention in that round of voting.)
- A member is also ineligible to cast a vote in a round if the city (s)he represents is in contention in that round of voting.
- As long as the member is eligible, (s)he must vote and vote for only one candidate city in any round of voting.

The following incomplete table shows the information on cities that received the maximum and minimum votes in different rounds, the number of votes cast in their favor, and the total votes that were cast in those rounds.

Round	Total Votes Cast	Maximum Votes Cast		Eliminated	
		City	No. of Votes	City	No. of Votes
1		London	30	New York	12
2	83	Paris	32	Beijing	21
3	75				

It is also known that:

- All those who voted for London and Paris in round 1, continued to vote for the same cities in

subsequent rounds as long as these cities were in contention. 75% of those who voted for Beijing in round 1, voted for Beijing in round 2 as well.

- Those who voted for New York in round 1, voted either for Beijing or Paris in round 2.
 - The difference in votes cast for the two contending cities in the last round was 1.
 - 50% of those who voted for Beijing in round 1, voted for Paris in round 3.
11. What percentage of members from among those who voted for New York in round 1, voted for Beijing in round 2?
- (a) 33.33 (b) 50
(c) 66.67 (d) 75
12. What is the number of votes cast for Paris in round 1?
- (a) 16 (b) 18
(c) 22 (d) 24
13. What percentage of members from among those who voted for Beijing in round 2 and were eligible to vote in round 3, voted for London?
- (a) 33.33 (b) 38.10
(c) 50 (d) 66.67
14. Which of the following statements must be true?
- I. IOC member from New York must have voted for Paris in round 2.
II. IOC member from Beijing voted for London in round 3.
- (a) Only I (b) Only II
(c) Both I and II (d) Neither I nor II

Answer Questions 15–18 on the basis of the information given below:

Help Distress (HD) is an NGO involved in providing assistance to people suffering from natural disasters. Currently, it has 37 volunteers. They are involved in three projects: Tsunami Relief (TR) in Tamil Nadu, Flood Relief (FR) in Maharashtra, and Earthquake Relief (ER) in Gujarat. Each volunteer working with Help Distress has to be involved in at least one relief work project.

- A Maximum number of volunteers are involved in the FR project. Among them, the number of volunteers involved in FR project alone is equal to the volunteers having additional involvement in the ER project.
 - The number of volunteers involved in the ER project alone is double the number of volunteers involved in all the three projects.
 - 17 volunteers are involved in the TR project.
 - The number of volunteers involved in the TR project alone is one less than the number of volunteers involved in ER project alone.
 - Ten volunteers involved in the TR project are also involved in at least one more project.
15. Based on the information given above, the minimum number of volunteers involved in both FR

and TR projects, but not in the ER project is:

- (a) 1 (b) 3
(c) 4 (d) 5
16. Which of the following additional information would enable to find the exact number of volunteers involved in various projects?
- (a) Twenty volunteers are involved in FR.
(b) Four volunteers are involved in all the three projects.
(c) Twenty three volunteers are involved in exactly one project.
(d) No need for any additional information.
17. After some time, the volunteers who were involved in all the three projects were asked to withdraw from one project. As a result, one of the volunteers opted out of the TR project, and one opted out of the ER project, while the remaining ones involved in all the three projects opted out of the FR project. Which of the following statements, then, necessarily follows?
- (a) The lowest number of volunteers is now in TR project.
(b) More volunteers are now in FR project as compared to ER project.
(c) More volunteers are now in TR project as compared to ER project.
(d) None of the above.
18. After the withdrawal of volunteers, as indicated in Question 17, some new volunteers joined the NGO. Each one of them was allotted only one project in a manner such that, the number of volunteers working in one project alone for each of the three projects became identical. At that point, it was also found that the number of volunteers involved in FR and ER projects was the same as the number of volunteers involved in TR and ER projects. Which of the projects now has the highest number of volunteers?
- (a) ER (b) FR
(c) TR (d) Cannot be determined

Answer Key

1. (c)	2. (b)	3. (d)	4. (c)
5. (a)	6. (c)	7. (c)	8. (b)
9. (c)	10. (b)	11. (d)	12. (d)
13. (d)	14. (a)	15. (b)	16. (a)
17. (d)	18. (a)		

1. Let the Englishmen be A , B and C . Out of these let C know French. Also, the French can be assumed to be D , E and F . First A and B call C so that C knows all three secrets with the

Englishmen. Also D and E call F so that F knows all three secrets with the French. Then let C call F to exchange all secrets. At this point C and F would know all 6 secrets. They then need to transmit it to A, B and D, E respectively. So C must call A and he must also call B . Also F must call D and also call E . Thus there will be a total of $2 + 2 + 1 + 2 + 2 = 9$ calls.

2. You would need to solve this using options. Suppose there are 10 tiles along an edge of the rectangle—then all these edge tiles would be white. So, the number of white tiles would be $10 + 10 + x + x$ (where x is the number of unique tiles on the other edge of the rectangle).

With $x = 1$, the number of white tiles = 22 and the number of total tiles = $10 \times 3 = 30$. This cannot be the answer as the number of red tiles would only be 8, which is less than required.

Next, take x as 2. In this case, White tiles = 24 and total tiles = $10 \times 4 = 40$. This cannot be the answer as the number of red tiles would only be 16, which is less than required.

Next, take x as 3. In this case, White tiles = 26 and total tiles = $10 \times 5 = 50$. This cannot be the answer as the number of red tiles would only be 24, which is less than required.

Next, take x as 4. In this case, White tiles = 28 and total tiles = $10 \times 6 = 60$. This cannot be the answer as the number of red tiles would be 32 which is more than required. Thus we can reject 10 as the answer as increasing x would only increase the number of red tiles further.

We then check for option (b) whereby there could be 12 tiles on an edge of the rectangle.

Again, the number of white tiles would be $12 + 12 + x + x$.

For $x = 1$ white tiles = 26 and total of $12 \times 3 = 36$ tiles. This cannot be the answer as the number of red tiles would only be 10, which is less than required.

For $x = 2$, white tiles = 28 and total of $12 \times 4 = 48$ tiles. This cannot be the answer as the number of red tiles would only be 20, which is less than required.

For $x = 3$, white tiles = 30 and total of $12 \times 5 = 60$ tiles. In this case we see that the number of red tiles would also be equal to 30. Thus, 12 tiles along an edge is possible as an answer.

Thus option (b) is correct.

Solutions for Questions 3–6:

The first thing you should realise in this question, is that the tournament consists of the following rounds with the respective match ups based on the seedings of the players expected to reach that particular round.

Match #	Round 1		Round 2		Quarter Final		Semi Final		Final	
1	1	32	1	16	1	8	1	4	1	2
2	2	31	2	15	2	7	2	3		
3	3	30	3	14	3	6				
4	4	29	4	13	4	5				
5	5	28	5	12						
6	6	27	6	11						
7	7	26	7	10						

8	8	25	8	9
9	9	24		
10	10	23		
11	11	22		
12	12	21		
13	13	20		
14	14	19		
15	15	18		
16	16	17		

With this basic structure of the tournament you are ready to move to the questions:

- If there are no upsets in the first round, the second round would have the top 16 players reaching it. Now, in order to find the opponent of Lindsay Davenport in the quarter final, we need to see the opponent of seed no. 2 in match no. 2 in the quarter finals. It is expected to be the 7th seed. But the question also says that matches 6, 7 and 8 of the second round ended in upsets. This means that the 7th seed would lose to the 10th seed in the second round. Hence, the 10th seed would be the required opponent. From the original table we can see that the 10th seed is Venus Williams, hence option (d) is correct.
- The scheduled opponent of Maria Sharapova (seed no. 1) in the quarter final is Seed no. 8 (Serena Williams). However we know that she loses in the first round which must be against the 25th ranked player. For Maria Sharapova’s opponent we then need to see what would happen in the second round match between 9 and 25. 9 being Nadia Petrova and knowing that she reaches the semi final, we know that 9 must have won this match. Hence, Sharapova’s quarter final opponent would be Nadia Petrova.
- If there are upsets in all even numbered matches in the first round, it means that only all the odd numbered players would reach the second round. For Maria Sharapova’s semi final opponent we need to track the path of seed no. 4. We can arrive at the answer based on the following deductions.

In the first round 4 loses to 29, and hence in the second round the match up would be between 13 and 29. No upsets in the second round means 13 would win this match. Scheduled opponent for 13 in the third round (Quarter final) would be 5, and 5 would lose neither in the first nor the second round. Hence, the quarter final between 5 and 13 would determine the opponent for Sharapova in the semi finals. Either of them can win this match, as we have not been given any details of the quarter final results. Hence, the lowest seeded player Sharapova would face Seed # 13—Anastasia Myskina in the semi finals.
- Kim Clijsters, being the fourth seed would face Sharapova in the semi finals and hence cannot play her in the finals.

Solutions for Questions 7–10:

A synopsis of the information would give us the following:

Venkat has invested ` 100 each in the stock of 4 companies viz: *A, B, C* and *D* expecting returns of 20%, 10%, 30% and 40% respectively. The four companies are randomly distributed across Cement, IT, Steel and Auto industries. For one company from cement or IT industry, the returns were twice the expected returns (¥2), while for one company from Steel or Auto industry the returns were ¥1.5 times the expected returns.

At this point of time you should realise that the minimum return Venkat is expecting would amount to (20 + 10 + 30 + 40 = 100). This value would go up on the basis of which of these numbers we choose to multiply by 1.5 and which by 2.

Naturally, multiplication by 2 should be for the largest value and by 1.5 should be for the second largest value if we are expecting a maximisation of return.

Conversely, multiplication by 2 should be for the minimum value and by 1.5 for the second lowest value if we are looking to minimise the return.

7. For the minimum average return the growth in return should be minimised.
This can be done as Total return = 2 ¥ 10 + 1.5 ¥ 20 + 30 + 40 =130. So average return = 130/4 = 32.5
8. An average return of 35% means a total return of 35 ¥ 4 = 140. To achive this think of how the value of 100 would increase based on which numbers you choose to multiply. We have a slack (or elbow room) of an increase by 40 and we need to adjust the ¥2 and the ¥1.5 in such a way that the increase is exactly 40. Think about this as below:

B	A	C	D
10	20	30	40

If we multiply 40% by 2, the increase in value would be by 40 and we would not have any slack left to use the multiplication by 1.5. Hence, this is not possible.

If we use the ¥2 for 30, we will get +30 leaving a slack of 10. Then the ¥1.5 can be used on 20 to get +10. We would get a total of +40.

Similarly, ¥2 for 20 and ¥1.5 for 40 would give us 20+20 and ¥2 for 10, would not allow us to reach 40 as we need to cover a slack of 30 when we use ¥1.5—which is not possible because even if we maximise ¥1.5 by using it on 40, we would still add only 20 to it.

	B	A	C	D
	10	20	30	40
Possibility 1		¥1.5	¥2	
Possibility 2		x2		¥1.5

From the above table it is clear that, both statements I and II are true because in both possibilities Company A announced extraordinarily good results while Company B did not.

9. 38.75% return on average means a total return of 155. An increase of +55:

B	A	C	D
10	20	30	40
		¥1.5	¥2

It is obvious that a +55 can only be done by using +40 (by multiplying 40 by 2) and +15 (by multiplying C by 1.5).

Hence, C belongs to Auto or Steel and D belongs to Cement or IT. Statements I and IV are correct.

10. If C belongs to Cement or IT, and announces extraordinarily good results it is clear that we have at least a +30 for it return wise. Further, the minimum increase due to the ¥1.5 would be +5 (if we use it on 10). Thus, a minimum total return of 135 and a minimum average return of $135/4= 33.75$.
- In this case, it must also be true that Company B belonged to Auto or Steel Industry.
- Thus, statements II and IV are correct.

Solutions for Questions 11–14:

When you read the initial set of instructions, you should realise that there are essentially two rules which are operating here in order to change the eligibility of a country’s representative from voting. From the language “A member is allowed to cast a vote for at most two different cities in all rounds of voting combined”, we can infer the following rule:

Rule 1: Making an eligible member ineligible: This would occur when a member votes for 1 city in the first round, and another in the second round and both these cities have been eliminated before the third round. Looking at the table—an eligible member would become ineligible to vote only in case he has voted for New York in the first round and Beijing in the second round. This is the only way of making an eligible member ineligible to vote and hence would only occur for some of those 2 voters who voted for New York in the first round (those who shifted their votes to Beijing in the second round).

This rule, when it applies would naturally reduce the number of voters who voted in a particular round from the number who voted in the previous round. Also the third round is the first time this rule would apply.

Rule 2: Making an ineligible member eligible: This rule can be inferred from the language “A member is also ineligible in that round of voting.” This obviously means that if I am a member whose city is in contention, then I cannot vote. However, if my city gets eliminated from the fray, then I would become eligible to vote.

This rule would obviously apply only to the member from New York in the second round (i.e., he would become eligible to vote in the second round) and to the member from Beijing in the third round as these are the only two cities that earlier became ineligible and later became eligible.

Based on these deductions we can start looking at the table:

Round	Total Votes Cast	Maximum Votes Cast		Eliminated			
		City	No. of votes	City	No. of votes		

1	82	London	30	New York	12	Paris	Beijing
2	83	Paris	32	Beijing	21	London (30)	
3	75						

The following deductions can be drawn:

In the first round, the number of votes cast must be 82 (as in the second round the member from New York has become eligible to vote).

This means that Paris + Beijing must be 40 (in the first round).

Now, from the first clue we realise that since 75% of the Beijing voters continued to vote for Beijing in the second round, the inference is that Beijing’s number in the first round must be a multiple of 4. (Otherwise 75% would not be an integer).

This gives us the following possibilities for Paris and Beijing in the first round:

	Paris	Beijing
Possibility 1	24	16
Possibility 2	20	20
Possibility 3	16	24

At this point of time you should also realise that the change from 83 votes cast in the second round and 75 votes cast in the third round would be due to two things:

The member from Beijing becoming eligible (thus increasing the number of eligible voters to 84) and the members who shifted out of New York to Beijing becoming ineligible to vote in the third round. $83 + 1 - X = 75$. Thus, 9 New York voters must have shifted to Beijing in the second round.

We also know that the London voters continued to vote for London—so London must have found no new voters. This means that Paris must have got 3 of the New York voters from the first round, voting for it in the second round.

We need to now try to fit in one of the above three possibilities to see which of them gives us the correct situation.

We also know that 75% of Beijing’s first round voters continued to vote for Beijing in the second round, thus 25% of Beijing’s first round voters must have shifted out of Beijing.

In the second round there are a total of 12 New York voters, 1 member from New York and 25% of Beijing’s first round voters who are free to vote.

Since, Beijing got 21 votes the only way this could have happened would be if Possibility 1 was correct in the above case. In such a case the following numbers would work out:

London—30 voters in first round who all carry over to the second round

Beijing—16 voters in the first round, of which 75% (12) voted again for them + 9 voters who voted for New York in the first round shifted to Beijing in the second round = A total of 21 votes in the second round.

Paris—24 votes in the first round + 4 voters who voted for Beijing in the first round voted for Paris

in the second + 3 voters who voted for New York in the first round voted for Paris in the second + 1 member from New York who was not eligible to vote in the first round and became eligible to vote in the second round = A total of 32 votes in the second round.

In the third round, since there are 75 votes and the difference between the votes cast for the two cities was 1 it must be that the two cities got 38 and 37 votes respectively. What we need to see is which city had how many votes.

For this purpose, we first need to understand the number of free votes that there are. An analysis of the second round would give us that:

Out of the 21 voters for Beijing in the second round, 9 have become ineligible to vote. So there must be 12 free votes from there.

Also the member from Beijing would be eligible to vote in the third round.

Thus there would be a total of 13 free votes in the third round.

We need to match this deduction with the clues we are left with.

For this purpose we have the last clue—50% of those who voted for Beijing in the first round voted for Paris in Round 3.

This means that Paris must have got an additional 4 voters from Beijing (as it already got 4 voters in the second round and those 4 cannot move to London as they have already voted for 2 cities in the first two rounds).

Thus, out of the 12 free votes available from Beijing's voters, 4 have gone to Paris and 8 must have shifted to London. Thus, London reaches 38 and consequently Paris must have got the member from Beijing to vote for it.

So, London = 30 votes in round 2 + 8 Beijing voters = 38 votes

Paris = 32 votes in round 2 + 4 Beijing voters + 1 member from Beijing = 37 votes

Hence, the answers are:

11. 9 out of 12 = 75%
12. 24
13. 8 out of 12 = 66.66%
14. A is true but B is not. Hence, Option (a) is correct.

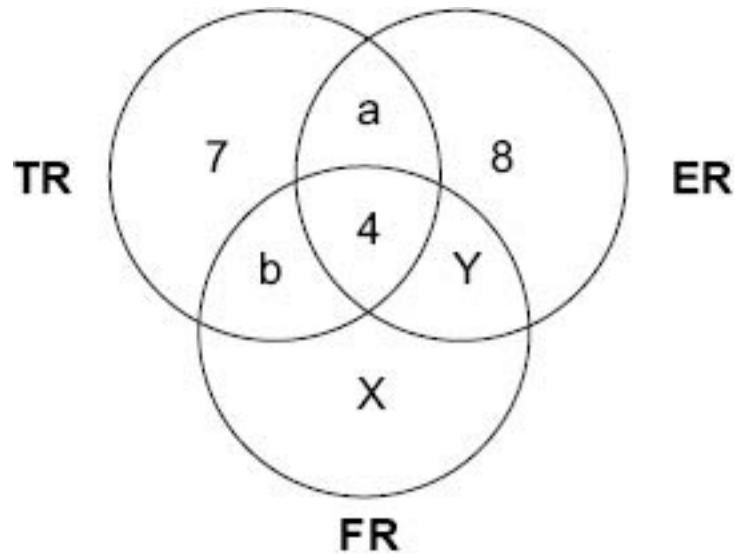
Solutions for Questions 15–18:

The figure has been made on the following deductions and facts which can be deduced based on the following clues:

- The number of volunteers involved in the ER project alone is double the number of volunteers involved in all the three projects.
- 17 volunteers are involved in the TR project.
- The number of volunteers involved in the TR project alone is one less than the number of volunteers involved in ER project alone.
- Ten volunteers involved in the TR project are also involved in at least one more project.
 1. TR is given as 17 (overall) out of which 10 are involved in at least 1 more project apart from TR. Hence, only TR would be 7.

2. ER alone is 1 more than TR alone. So ER alone would be 8. Also volunteers in all three projects is half of ER alone so all three should be 4.

At this point of analysis we have the figure as shown below:



At this point we also know,

$$x + y = 12 \text{ and } a + b = 6$$

At this point of our analysis the only clue we need to further interpret is the first one—

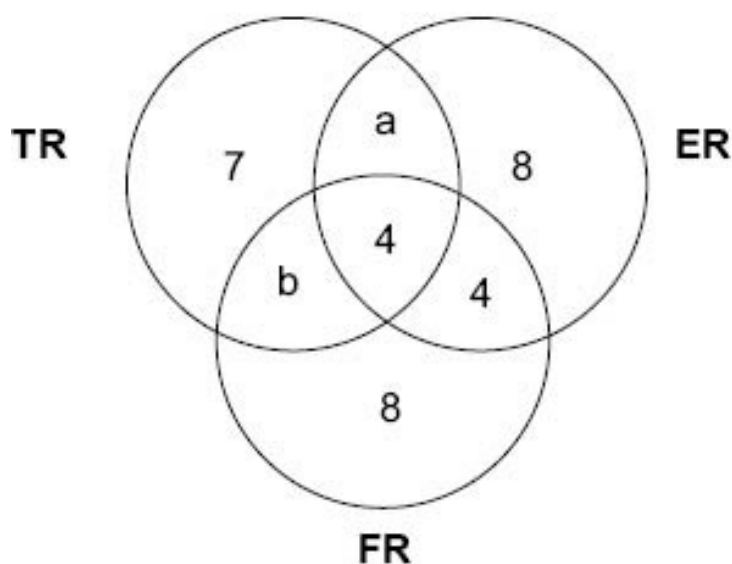
- A Maximum number of volunteers are involved in the FR project. Among them, the number of volunteers involved in FR project alone is equal to the volunteers having additional involvement in the ER project.

From the second statement in this clue we can deduce that, since FR only has to be equal to the number having additional involvement in ER—X must be 8 and Y must be 4.

Note: There was an interpretation based confusion which test takers had while thinking about this clue in the exam. The confusion was—what does additional involvement in ER mean? Does it mean FR and ER only or does it include both the areas, viz: FR and ER only as well as FR, ER and TR.

A little bit of clear thinking would tell you that when we say—FR with additional involvement of ER we are not referring to any third (or for that matter fourth) category. Hence, the 4 people in all three would also be counted in this category.

Thus the new figure evolves to:



Now we know that $a + b = 6$.

This leads to the following possibility matrix:

		TR	FR (A Maximum) $16 + b$	ER $16 + a$	
Possibility 1	$a = 6, b = 0$	17	16	22	Not possible
Possibility 2	$a = 5, b = 1$	17	17	21	Not possible
Possibility 3	$a = 4, b = 2$	17	18	20	Not possible
Possibility 4	$a = 3, b = 3$	17	19	19	Possible
Possibility 5	$a = 2, b = 4$	17	20	18	Possible
Possibility 6	$a = 1, b = 5$	17	21	17	Possible
Possibility 7	$a = 0, b = 6$	17	22	16	Possible

Note here: There was huge confusion in the minds of test takers as must be in yours as you read this. FR is given as “A Maximum”. So does this condition allow us to take $a = 3$ and $b = 3$ as a possible distribution of 6 between a and b (as shown in possibility 4 above).

As you can see, at these values we get $FR = ER = 19$ [and FR is not a unique maximum].

And that is exactly what you perhaps need to understand. The language used in the question “A maximum” means literally “one of the maximums”, i.e., it allows for more than one maximum simultaneously. Hence, interpreting that FR is a unique maximum in this situation is an error.

Based on the above tabular analysis we can get the answers to the question asked:

15. The minimum value of b is asked for. From the table it is 3. Option (b) is correct.

16. The first option is the correct answer as: if we know that $FR = 20$, then we know the value of $b = 4$ and we get all the values in the given situation. Notice that the information carried in statements of options (b) and (c) are already known to us.

For 17 and 18, the following changes would take place:

		TR (one person opted out of TR)	FR = 14 + b	ER = 15 + a	
Possibility 1	$a = 3, b = 3$	16	17	18	Possible
Possibility 2	$a = 2, b = 4$	16	18	17	Possible
Possibility 3	$a = 1, b = 5$	16	19	16	Possible
Possibility 4	$a = 0, b = 6$	16	20	15	Possible

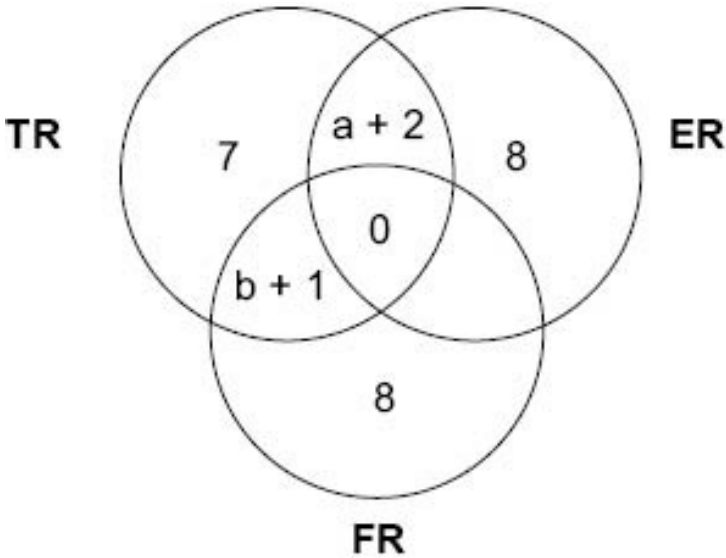
We have deleted the values of $a = 4, 5$ and 6 as we had ruled those values out from the previous questions' analysis.

17. It can be seen that option (a) is not true (rejected by possibility 4 where ER has the least number of volunteers).

Option (b) can be rejected as possibility 1 has $ER > FR$.

Option (c) is rejected due to possibilities 1, 2 and 3.

Hence, the correct answer is none of these.



18. For FR & ER to be same as TR + ER it means $a + 2 = 5$. Hence, $a = 3$ and $b = 3$.

Then the numbers become:

$$TR = 16 + m + 1 = 17 + m$$

$$ER = 18 + m$$

$$FR = 17 + m$$

where m is the number of volunteers inducted into ER alone and FR alone ($m + 1$ being the number inducted into TR alone).

Clearly ER would have the highest number of volunteers.

Directions for Questions 1–4: Each question is followed by two statements, *A* and *B*. Answer each question using the following instructions:

Choose 1 if the question can be answered by using one of the statements alone but not by using the other statement alone.

Choose 2 if the question can be answered by using either of the statements alone.

Choose 3 if the question can be answered by using both statements together but not by either statement alone.

Choose 4 if the question cannot be answered on the basis of the two statements.

1. Tarak is standing 2 steps to the left of a red mark and 3 steps to the right of a blue mark. He tosses a coin. If it comes up heads, he moves one step to the right; otherwise he moves one step to the left. He keeps doing this until he reaches at one of the two marks, and then he stops. At which mark does he stop?
 - (a) He stops after 21 coin tosses.
 - (b) He obtains three more tails than heads.
2. Four candidates for an award obtain distinct scores in a test. Each of the four casts a vote to choose the winner of the award. The candidate who gets the largest number of votes wins the award. In case of a tie in the voting process, the candidate with the highest score wins the award. Who wins the award?
 - (a) The candidates with top three scores each vote for the top scorer amongst the other three.
 - (b) The candidate with the lowest score votes for the player with the second highest score.
3. Nandini paid for an article using currency notes of denominations ` 1, ` 2, ` 5, and ` 10 using at least one note of each denomination. The total number of five and ten rupee notes used was one more than the total number of one and two rupee notes used. What was the price of the article?
 - (a) Nandini used a total of 13 currency notes.

- (b) The price of the article was a multiple of ` 10
4. In a class of 30 students, Rashmi secured third rank among the girls, while her brother Kumar studying in the same class secured sixth rank in the whole class. Between the two, who had a better overall rank?
- (a) Kumar was among the top 25% of the boys merit list in the class in which 60% were boys.
- (b) There were three boys among the top five rank holders, and three girls among the top ten rank holders.

Directions for Questions 5–8: Answer the questions on the basis of the information given below.

Twenty one participants from four continents (Africa, Americas, Australasia and Europe) attended a United Nations conference. Each participant was an expert in one of four fields, labour, health, population studies, and refugee relocation. The following five facts about the participants are given.

- (a) The number of labour experts in the camp was exactly half the number of experts in each of the three other categories.
- (b) Africa did not send any labour expert. Otherwise, every continent, including Africa, sent at least one expert for each category.
- (c) None of the continents sent more than three experts in any category.
- (d) If there had been one less Australasian expert, then the Americas would have had twice as many experts as each of the other continents.
- (e) Mike and Alfanso are leading experts of population studies who attended the conference. They are from Australasia.
5. If Ramos is the lone American expert in population studies, which of the following is NOT true about the number of experts in the conference from the four continents?
- (a) There is one expert in health from Africa.
- (b) There is one expert in refugee relocation from Africa.
- (c) There are two experts in health from the Americas.
- (d) There are three experts in refugee relocation from the Americas.
6. Alex, an American expert in refugee relocation, was the first keynote speaker in the conference. What can be inferred about the number of American experts in refugee relocation in the conference, excluding Alex?
- (i). At least one (ii). At most two
- (a) Only (i) and not (ii)
- (b) Only (ii) and not (i)
- (c) Both (i) and (ii)
- (d) Neither (i) nor (ii)
7. Which of the following numbers cannot be determined from the information given?
- (a) Number of labour experts from the Americas
- (b) Number of health experts from Europe
- (c) Number of health experts from Australasia

- (d) Number of experts in refugee relocation from Africa
8. Which of the following combinations is NOT possible?
- (a) 2 experts in population studies from the Americas and 2 health experts from Africa attended the conference.
- (b) 2 experts in population studies from the Americas and 1 health experts from Africa attended the conference.
- (c) 3 experts in population studies from the Americas and 1 health experts from Africa attended the conference.
- (d) Africa and America each had 1 expert in population studies attending the conference.

Directions for Questions 9–12: Answer the questions on the basis of the information given below.

The year was 2006. All six teams in Pool A of World Cup hockey play each other exactly once. Each win earns a team three points, a draw earns one point and a loss earns zero points. The two teams with the highest points qualify for the semi finals. In case of a tie, the team with the highest goal difference (Goals For – Goals Against) qualifies.

In the opening match, Spain lost to Germany. After the second round (after each team played two matches), the pool table looked as shown below.

Teams	Games played	Won	Drawn	Lost	Goals For	Goals Against	Points
Germany	2	2	0	0	3	1	6
Argentina	2	2	0	0	2	0	6
Spain	2	1	0	1	5	2	3
Pakistan	2	1	0	1	2	1	3
New Zealand	2	0	0	2	1	6	0
South Africa	2	0	0	2	1	4	0

In the third round, Spain played Pakistan, Argentina played Germany, and New Zealand played South Africa. All the third round matches resulted in a draw. The following are some results from the fourth and fifth round matches:

- (a) Spain won both the fourth and fifth round matches.
- (b) Both Argentina and Germany won their fifth round matches by 3 goals to 0.
- (c) Pakistan won both the fourth and fifth round matches by 1 goal to 0.
9. Which one of the following statements is true about matches played in the first two rounds?
- (a) Pakistan beat South Africa by 2 goals to 1.
- (b) Argentina beat Pakistan by 1 goal to 0.
- (c) Germany beat Pakistan by 2 goals to 1.
- (d) Germany beat Spain by 2 goals to 1.
10. Which one of the following statements is true about matches played in the first two rounds?

- (a) Germany beat New Zealand by 1 goal to 0.
 - (b) Spain beat New Zealand by 4 goals to 0.
 - (c) Germany beat Pakistan by 2 goals to 1.
 - (d) Germany beat Spain by 2 goals to 1.
11. Which team finished at the top of the pool after five rounds of matches?
- (a) Argentina
 - (b) Germany
 - (c) Spain
 - (d) Cannot be determined
12. If Pakistan qualified as one of the two teams from Pool A, which was the other team that qualified?
- (a) Argentina
 - (b) Germany
 - (c) Spain
 - (d) Cannot be determined

Directions for Questions 13 and 14: Answer the questions independently of each other.

In an examination there are hundred questions divided into 3 groups *A*, *B* and *C*, such that each group contains at least 1 question. Each question in Group *A* carries 1 mark, each question in Group *B* carries 2 marks, each question in Group *C* carries 3 marks. It is known that the questions in Group *A* together carry at least 60% of the total marks.

13. If Group *B* contains 23 questions, then how many questions are there in Group *C*?
- (a) 1
 - (b) 2
 - (c) 3
 - (d) Cannot be determined
14. If Group *C* contains 8 questions and Group *B* carries at least 20% of the total marks, which of the following best describes the number of questions in Group *B*?
- (a) 11 or 12
 - (b) 12 or 13
 - (c) 13 or 14
 - (d) 14 or 15

Answer Key

1. (b)	2. (a)	3. (d)	4. (a)
5. (c)	6. (c)	7. (d)	8. (d)
9. (b)	10. (d)	11. (c)	12. (d)
13. (a)	14. (c)		

Solutions:

Solutions for Data Sufficiency (Questions 1–14)

1.

The given situation is using even-odd logic. Statement A alone is sufficient as it can be seen that if he stops after 21 tosses, he must have stopped at the blue mark only.

Statement B alone is also sufficient since if we know that he obtains 3 more tails than heads, the number of tosses must have been odd. Hence, he could only be at the odd place.
2.

Assume the four candidates as A, B, C, D such that $A > B > C > D$. From statement A alone we can conclude that A must have voted for B , while B and C must have both voted for A . Thus A gets 2 votes and B gets 1 vote. Even though we do not know from this statement which way D voted, we can conclude that A must have won the award as even if D voted for B , there would be a tie in between A and B and the result would favour A (as he scored higher).

Thus Statement A alone is sufficient.

Statement B alone is not sufficient as it gives information only about the vote of 1 person. Hence, we choose option (a) as the answer.
3.

The question of getting the price of the article using only one of the two statements does not arise at all. Even after using both statements together there are too many possibilities for the article’s price. Hence, we choose option (d) as the correct answer.
4.

From Statement A alone, we can just conclude that there were 18 boys and 12 girls and Kumar’s rank among the boys must have been in the top 4.

From Statement B alone, we just know that there were 3 boys and 2 girls in the top 5. Also since Kumar is in sixth place (from the basic information available), his sister Rashmi must have come in after him (as she is the third girl).

Solutions for Questions 5–8:

Since there are 21 experts in all from the first clue we get that if number of labour experts is x , then the number of experts in each of the other areas would be $2x$ each. Thus we get $7x = 21$ and $x = 3$.

Also from the fourth clue (d), we get Americas ($2x$) + Australia ($x + 1$) + Europe (x) + Africa (x) = 21 gives the respective number of experts from each of these continents as 8, 5, 4 and 4.

We can then start off with the basic table as follows (Adding the information in the second clue (b)):

	Labour (3)	Health (6)	Population Studies (6)	Refugee Relocation (6)	Slack
Americas (8)	1	At least 1	At least 1	At least 1	4
Australasia (5)	1	At least 1	At least 1	At least 1	1
Europe (4)	1	At least 1	At least 1	At least 1	0
Africa (4)	0	At least 1	At least 1	At least 1	1
Slack	0	2	2	2	

Analysis of the slacks (means how much freedom we have in placing more people in the row or the column) will give us the following definite values. We have also used the fifth clue (which says that there are 2 experts in population studies from Australasia) in order to make this table:

	Labour (3)	Health (6)	Population Studies (6)	Refugee Relocation (6)	Slack
Americas (8)	1	At least 1	At least 1	At least 1	4
Australasia (5)	1	1	2	1	0
Europe (4)	1	1	1	1	0
Africa (4)	0	At least 1	At least 1	At least 1	1
Slack	0	2	1	2	

This leaves us with the requirement to place 4 experts from the Americas between Health, Population Studies and Refugee Relocation.

This leaves us with the requirement to place 1 expert from Africa between Health, Population Studies and Refugee Relocation.

This leaves us with the requirement to place 2 more experts in the health column, 1 more expert in the Population Studies column and 2 more experts in the Refugee Relocation column.

At this stage we can move over to the questions and solve them on the basis of what we know till now:

- If Ramos is the lone American expert in population studies, we are left with the need to place 4 extra American experts between Health and Refugee Relocation; and we have the constraint of not more than 3 experts in any area came from one particular continent. Hence, the 4 experts (slack) can only be distributed as 2 and 2. This means that there must be 3 American experts in Health and Refugee Relocation respectively. Hence, Option (c) is not true.
- For this question, we will disregard the additional information contained in the previous question. Thus we have a situation, where we need to use up the slack of 4 (of the Americas) amongst Health (slack available 2), Population Studies (slack available 1) and Refugee Relocation (slack available 2). This means that we have to put in at least 1 extra expert in Refugee Relocation and at most 2 more experts in Refugee Relocation apart from Alex.
- Looking at the options we know:
 - Number of labour experts from the Americas = 1
 - Number of health experts from Europe = 1
 - Number of health experts from Australasia = 1
 - Number of Refugee Relocation experts from Africa = 1 or 2.

Hence, option (d) is the correct answer.

- Option (d) is not possible as if we were to put 1 expert in population studies from each of Americas and Africa, then the slack of 1 for Population Studies remains unused.

Solutions for Questions 9–12:

The solution of the questions in this set depends upon the ability to interpret the table and find out the appropriate linkages. Let us look at the table and create our interpretations. From here onward goals for will denoted as G.F. and goals against as G.A.

Teams	Games played	Won	Drawn	Lost	Goals For	Goals Against	Points

Germany	2	2	0	0	3	1	6
Argentina	2	2	0	0	2	0	6
Spain	2	1	0	1	5	2	3
Pakistan	2	1	0	1	2	1	3
New Zealand	2	0	0	2	1	6	0
South Africa	2	0	0	2	1	4	0

Let us first analyse the given goals for & goals against columns. We will conclude that Germany has played a total of two games and has lost none, i.e., we can deduce that its two wins can be in one of the two combinations which can be given as Won 1-0/2-1 or Won 2-1/1-0 (no other combinations are possible because it has to maintain 3-1 G.F./G.A. situation) against two teams which are Spain and either Pakistan(PAK) or New Zealand(NZ) or South Africa(SA).

The above deductions give us an insight into the situation of Team Spain in the table where if Germany wins by 2-1 then Spain wins its other match by 4-0 or if 1-0 then Spain wins by 5-1 according to G.F./G.A. column. Now look into the goals against column where only New Zealand and South Africa have greater than or equal to 4 goals. Refer to the Team South Africa row, South Africa has conceded 4 goals against itself hence it lost in both rounds. This results into the deduction that Spain played its second round against New Zealand and if this deduction is true then no other team can play NZ in round two.

Hence we can draw the following possibilities from the above deductions:

- (a) Team Germany: Round 1: vs. Spain Æ Won 2-1/ 1-0.
Round 2: vs. PAK/SA Æ Won 2-1 or 1-0.
Round 3: vs. Argentina Æ Draw
- (b) Team Spain: Round 1: vs. Germany Æ Lost 0-1/ 2-1.
Round 2: vs. NZ Æ Won 5-1/4-0.
Round 3: vs. PAK Æ Draw
- (c) Team NZ: Round 1: vs. Arg/PAK Æ Lost 1-0/1-2.
Round 2: vs. Spain Æ Lost 1-5/0-4.
Round 3: vs. South Africa Æ Draw.

Look into the G.F./G.A. columns, now we can draw conclusions from deductions made as:

- (i) PAK won round 1 by 2-0 and lost second by 0-1(G.F./G.A. Æ 2/1).
- (ii) Since NZ played Round 1 against PAK/Arg it could not have lost 1-2(because if PAK had won 2-1 against NZ in Round 1, its second round would be a draw and Arg has conceded two goals so it cannot win against NZ by 2-1). Hence NZ won rd.1 against Arg by 0-1 and lost Rd. 2 by 1-5 against Spain.

Now we can visualize the complete scenario as:

- (a) Team Germany: Round 1: vs. Spain Æ Won 1-0.
Round 2: vs. SA Æ won 2-1(since Pak cannot loose 2-1)

- (b) Team Spain: Round 1: vs. Germany $\text{\AE}$ Lost 0-1.
Round 2: vs. NZ $\text{\AE}$ Won 5-1.
- (c) Team NZ: Round 1: vs. Arg $\text{\AE}$ Lost 0-1.
Round 2: vs. Spain $\text{\AE}$ Lost 1-5.
- (d) Team PAK: Round 1: vs. SA $\text{\AE}$ Won 2-0.
Round 2: vs. Arg $\text{\AE}$ Lost 0-1.

The first three rounds are as under:

Round 1 matches:

Germany beat Spain 1-0.

Argentina beat PAK 1-0.

PAK beat SA 2-0.

Round 2 matches:

Spain beat NZ 5-1.

Argentina beat PAK 1-0.

Germany beat SA 2-1.

Round 3 matches:

Germany drew with Argentina.

Spain drew with Pakistan.

NZ drew with SA.

According to the information for the fourth and fifth round matches following deductions can be made:

Germany- Pakistan, Loss(0-1) & NZ won (3-0).

Argentina- Spain, loss by 'x' goals & SA won by 'y' goals.

Spain- Argentina won by 'x' goals & SA won by 'y' goals.

Pakistan- Germany won (1-0) & NZ won (1-0).

NZ- Germany loss (0-3) & PAK lost (0-1).

SA- Argentina lost (0-3) & Spain lost by 'y' goals.

Goal differences for the teams:

Germany $+1 + 1 + 0 - 1 + 3 = +4$

Argentina $+1 + 1 + 0 - x + 3 = 5 - x = \text{Max. } 4 \text{ or less.}$

Spain $-1 + 4 + 0 + x + y = 3 + x + y = \text{Min. } 5 \text{ or more.}$

Pakistan $+2 - 1 + 0 + 1 + 1 = +3.$

New Zealand $-1 - 4 + 0 - 3 - y = -6 - y$

Now, looking into the questions given:

9. Argentina beat Pakistan 1-0 is true. Hence, option (b) is correct.

10. Germany beat SA 2-1 is true. Hence, option (d) is correct.

11. Spain will finish on top after 5 rounds. Hence, option (c) is correct.

12. This cannot happen since at last Spain and Germany will have a higher goal difference than

Pakistan.

13. It can be seen that if Group C has 2 questions, the at least 60% marks criteria for Group A cannot be fulfilled. The scenario works out as:

Group B = 23 questions, 46 marks, Group C = 2 questions, 6 marks, Group A 75 questions, 75 marks. Percentage of marks in Group A = $75/127 < 60$.

However, if we take C having 1 question the condition is fulfilled.

Group B = 23 questions, 46 marks, Group C = 1 question, 3 marks, Group A 76 questions, 76 marks. Percentage of marks in Group A = $76/125 > 60$.

14. The following scenarios can get worked out. First test for 12 questions in group B.

	Number of questions	Number of marks	% of marks
Group A	80	80	>60
Group B	12	24	<20
Group C	8	24	
Total	100	128	

Conditions not satisfied, hence reject both options (a) and (b).

Now test for 13 questions in Group B

	Number of questions	Number of marks	% of marks
Group A	79	79	>60
Group B	13	26	=20
Group C	8	24	
Total	100	129	

Hence, the third option is correct.

It can be reasoned that for 15 questions in Group B, the Group A marks condition (at least 60% marks in group A) is rejected.

CAT 2003 Repeat

1. An intelligence agency forms a code of two distinct digits selected from 0,1,2,.....9, such that the first digit of the code is non-zero. The code, handwritten on a slip, can however potentially create confusion when read upside down. For example, the code 91 may appear as 16. How many codes are there for which no such confusion can arise?
(a) 80 (b) 78
(c) 71 (d) 69
2. A survey on a sample of 25 new cars being sold at a local auto dealer was conducted to see which of the three popular options (air-conditioning, radio and power windows) were already installed. The survey found:
15 had air-conditioning;
2 had air-conditioning and power windows but no radios;
12 had radio;
6 had air-conditioning and radio but no power windows;
11 had power windows;
4 had radio and power windows;
3 had all three options.
What is the number of cars that had none of the options?
(a) 4 (b) 3
(c) 1 (d) 2

Directions for Question 3 and 4: Answer the questions on the basis of the information given below.

A string of three English letters is formed as per the following rules:

- (a) The first letter is any vowel.

- (b) The second letter is m , n or p .
- (c) If the second letter is m then the third letter is any vowel which is different from the first letter.
- (d) If the second letter is n then the third letter is e or u .
- (e) If the second letter is p then the third letter is the same as the first letter.
3. How many strings of letters can possibly be formed using the above rules?
- (a) 40 (b) 45
- (c) 30 (d) 35
4. How many strings of letters can possibly be formed using the above rules such that the third letter of the string is e ?
- (a) 8 (b) 9
- (c) 10 (d) 11
5. Using only 2, 5, 10, 25 and 50 paise coins, what will be the minimum number of coins required to pay exactly 78 paise, 69 paise, and Re. 1.01 to three different persons?
- (a) 19 (b) 20
- (c) 17 (d) 18

Directions for Questions 6–9: Answer the questions on the basis of the following information.

Four families decided to attend the marriage ceremony of one of their colleagues. One family has no kids, while the others have at least one kid each. Each family with kids has at least one kid attending the marriage. Given below is some information about the families, and who reached when to attend the marriage.

The family with 2 kids came just before the family with no kids.

Shanthi who does not have any kids reached just before Sridevi's family.

Sunil and his wife reached last with their only kid.

Anil is not the husband of Joya.

Anil and Raj are fathers.

Sridevi's and Anita's daughters go to the same school.

Joya came before Shanthi and met Anita when she reached the venue.

Raman stays the farthest from the venue.

Raj said his son could not come because of his exams.

6. Which woman arrived third?

- (a) Shanthi (b) Sridevi
- (c) Anita (d) Joya

7. Name the correct pair of husband and wife?

- (a) Raj and Shanthi (b) Sunil and Sridevi

(c) Anil and Sridevi

(d) Raj and Anita

8. Of the following pairs, whose daughters go to the same school?

(a) Anil and Raman

(b) Sunil and Raman

(c) Sunil and Anil

(d) Raj and Anil

9. Whose family is known to have more than one kid for certain?

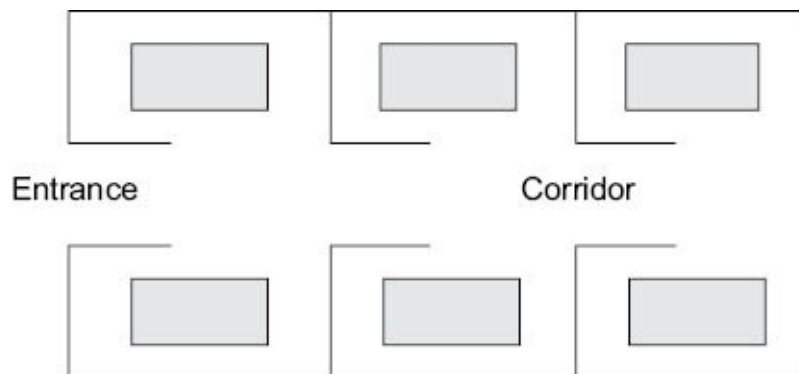
(a) Raman's

(b) Raj's

(c) Anil's

(d) Sunil's

Directions for Questions 10–13: Answer the questions on the basis of the following information.



The plan above shows an office block for six officers, *A*, *B*, *C*, *D*, *E* and *F*. Both *B* and *C* occupy offices to the right of the corridor (as one enters the office block) and *A* occupies an office to the left of the corridor. *E* and *F* occupy offices on opposite sides of the corridor but their offices do not face each other. The offices of *C* and *D* face each other. *E* does not have a corner office. *F*'s office is further down the corridor than *A*'s, but on the same side.

10. If *E* sits in his office and faces the corridor, whose office is to his left?

(a) A

(b) B

(c) C

(d) D

11. Whose office faces A's office?

(a) B

(b) C

(c) D

(d) E

12. Who is/are F's neighbour(s)?

(a) A only

(b) A and D

(c) C only

(d) B and C

13. D was heard telling someone to go further down the corridor to the last office on the right. To whose room was he trying to direct that person?

(a) A

(b) B

(c) C

(d) F

Directions for Questions 14–17: Answer the questions on the basis of the following information.

Seven faculty members at a management institute frequent a lounge for strong coffee and stimulating conversation. On being asked about their visit to the lounge last Friday, we got the following responses.

JC: I came in first, and the next two persons to enter were SS and SM. When I left the lounge, JP and VR were present in the lounge. DG left with me.

JP: When I entered the lounge with VR, JC was sitting there. There was someone else, but I cannot remember who it was.

SM: I went to the lounge for a short while, and met JC, SS and DG in the lounge that day.

SS: I left immediately after SM left.

DG: I met JC, SS, SM, JP, and VR during my first visit to the lounge. I went back to my office with JC. When I went to the lounge the second time, JP and VR were there.

PK: I had some urgent work, so I did not sit in the lounge that day, but just collected my coffee and left. JP and DG were the only people in the lounge while I was there.

VR: No comments.

14. Based on the responses, which of the two, JP or DG, entered the lounge first?

- (a) JP
- (b) DG
- (c) Both entered together.
- (d) Cannot be deduced.

15. Who was sitting with JC when JP entered the lounge?

(a) SS	(b) SM
(c) DG	(d) PK

16. How many of the seven members did VR meet on Friday in the lounge?

(a) 2	(b) 3
(c) 4	(d) 5

17. Who were the last two faculty members to leave the lounge?

(a) JC and DG	(b) PK and DG
(c) JP and PK	(d) JP and DG

Directions for Questions 18 and 19: Each question is followed by two statements, *A* and *B*. Answer each question using the following instructions:

Choose (a) if the question can be answered by using statement *A* alone but not by using *B* alone.

Choose (b) if the question can be answered by using statement *B* alone but not by using *A* alone.

Choose (c) if the question can be answered by using either statement alone.

Choose (d) if the question can be answered by using both the statements together but not by either Statement alone.

18. In a cricket match, the 'man of the match' award is given to the player scoring the highest

number of runs. In case of a tie, the player (out of those locked in the tie) who has taken the higher number of catches is chosen. Even thereafter if there is a tie, the player (out of those locked in the tie) who has dropped fewer catches is selected. Aakash, Biplab and Chirag, who were contenders for the award dropped at least one catch each. Biplab dropped 2 catches more than Aakash did, scored 50, and took 2 catches. Chirag got two chances to catch and dropped both. Who was the ‘man of the match’?

A. Chirag made 15 runs less than both Aakash and Biplab.

B. The catches dropped by Biplab are 1 more than the catches taken by Aakash.

19. Four friends, A, B, C and D got the top four ranks in a competitive examination, but A did not get the first, B did not get the second, C did not get the third, and D did not get the fourth rank. Who secured which rank?

A. Neither A nor D were among the first 2.

B. Neither B nor C was third or fourth.

Directions for Questions 20–24: Answer the questions on the basis of the following information.

Recently, the answers of a test held nationwide were leaked to a group of unscrupulous people. The investigative agency has arrested the mastermind and nine other people A, B, C, D, E, F, G, H, and I in this matter. Interrogating them, the following facts have been obtained regarding their operation. Initially the mastermind obtains the correct answer key. All the others create their answer keys in the following manner. They obtain the answer key from one or two people who already possess the same. These people are called his/her ‘sources’. If the person has two sources, then he/she compares the answer keys obtained from both sources. If the key to a question from both sources is identical, it is copied, otherwise it is left blank. If the person has only one source, he/she copies the source’s answers into his/her copy. Finally, each person compulsorily replaces one of the answers (not a blank one) with a wrong answer in his/her answer key.

The paper contained 200 questions; so the investigative agency has ruled out the possibility of two or more of them introducing wrong answers to the same question. The investigative agency has a copy of the correct answer key and has tabulated the following data. These data represent question numbers.

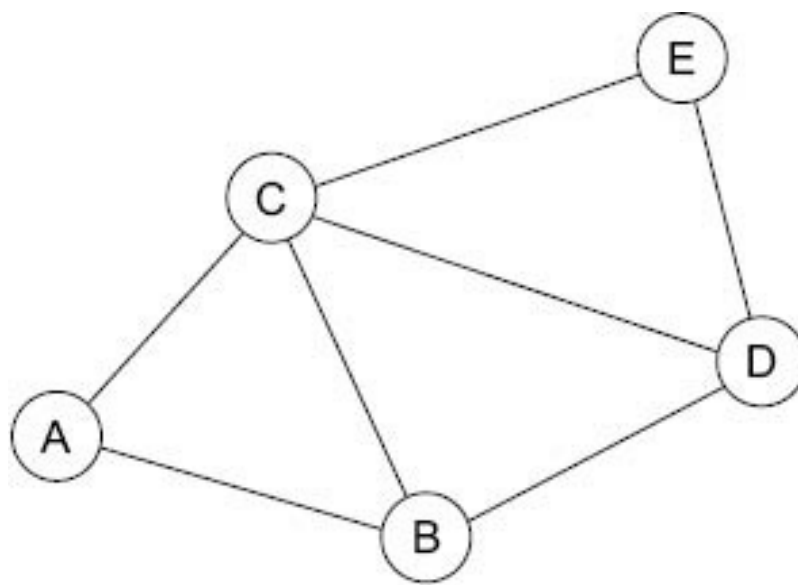
Name	Wrong Answer(s)	Blank Answer(s)
A	46	—
B	96	46, 90, 25
C	27, 56	17, 46, 90
D	17	—
E	46, 90	—
F	14, 46	92, 90
G	25	—
H	46, 92	—
I	27	17, 46, 90

20. Which one among the following must have two sources?
- (a) A (b) B
(c) C (d) D
21. How many people (excluding the mastermind) needed to make answer keys before C could make his answer key?
- (a) 2 (b) 3
(c) 4 (d) 5
22. Both G and H were sources to
- (a) F (b) B
(c) I (d) none of the nine
23. Which of the following statements is true?
- (a) C introduced the wrong answer to question 27.
(b) E introduced the wrong answer to question 46.
(c) F introduced the wrong answer to question 14.
(d) H introduced the wrong answer to question 46.
24. Which of the following two groups of people had identical sources?
- (I) A, D and G (II) E and H
(a) Only (I) (b) Only (II)
(c) Neither (I) nor (II) (d) Both (I) and (II)

Directions for Question 25: Answer the question on the basis of the following information.

25. Seventy per cent of the employees in a multinational corporation have VCD players, 75 per cent have microwave ovens, 80 per cent have ACs and 85 per cent have washing machines. At least what percentage of employees have all four gadgets?
- (a) 15 (b) 5
(c) 10 (d) Cannot be determined

Directions for Questions 26 and 27: Answer the questions on the basis of the following information. Shown below is the layout of major streets in a city.



Two days (Thursday and Friday) are left for campaigning before a major election, and the city administration has received requests from five political parties for taking out their processions along the following routes.

Congress: A-C-D-E **BJP:** A-B-D-E **SP:** A-B-C-E

BSP: B-C-E **CPM:** A-C-D

Street B-D cannot be used for a political procession on Thursday due to a religious procession. The district administration has a policy of not allowing more than one procession to pass along the same street on the same day. However, the administration must allow all parties to take out their processions during these two days.

26. Congress procession can be allowed

- (a) only on Thursday.
- (b) only on Friday.
- (c) on either day.
- (d) only if the religious procession is cancelled.

27. Which of the following is NOT true?

- (a) Congress and SP can take out their processions on the same day.
- (b) The CPM procession cannot be allowed on Thursday.
- (c) The BJP procession can only take place on Friday.
- (d) Congress and BSP can take out their processions on the same day.

Answer Key

1. (b)	2. (d)	3. (d)	4. (c)
5. (a)	6. (a)	7. (b)	8. (c)
9. (b)	10. (c)	11. (c)	12. (a)
13. (b)	14. (b)	15. (c)	16. (b)

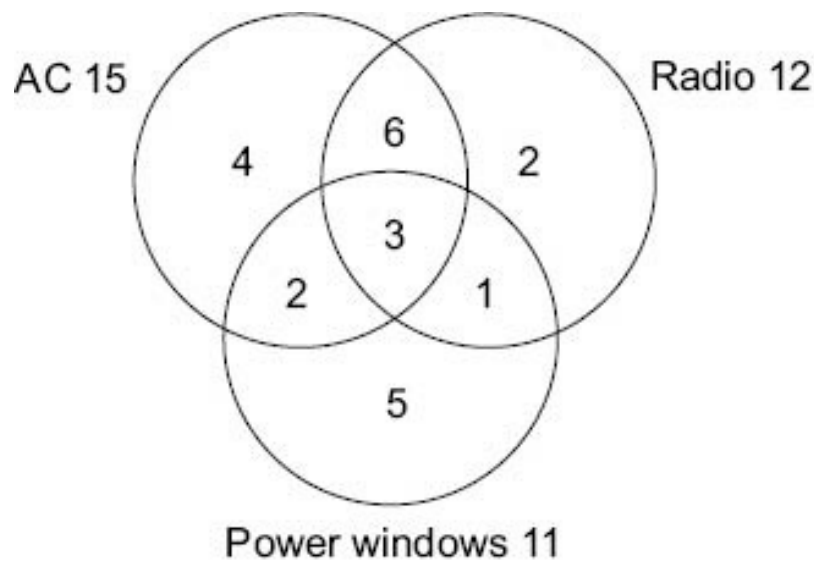
17. (d)	18. (d)	19. (c)	20. (b)
21. (c)	22. (d)	23. (c)	24. (d)
25. (c)	26. (a)	27. (d)	

Solutions to CAT 2003 Retest

1. The codes which will create a confusion would be:

16 and 91, 18 and 81, 19 and 61, 66 and 99, 68 and 89, 86 and 98: A total of 12 codes which will have confusion. Hence out of 90 two digit codes 78 would have no confusion.

Solution for Question 2:



From the figure it is clear that there would be a total of 23 cars which had one or more of AC/Radio/Power Steering. Hence, 2 cars had none of the three. Option (d) is correct.

Solutions for Questions 3 and 4:

First of all make a structure of what are the possible combinations:

With m as the middle letter—(vowel) m (another vowel)

With n as the middle letter—(vowel) n (e or u)

With p as the middle letter—(vowel) p (same vowel)

3. The number of possible letter strings are—

With m : $5 \times 4 = 20$, with $n = 5 \times 2 = 10$

With p : $5 \times 1 = 5$

Thus a total of 35 possible strings.

4. With m : 4, n : 5, p : 1. Thus a total of 10 strings.

5. $78 = 50 + 10 + 10 + 2 + 2 + 2 + 2 \text{ } \pounds 7 \text{ coins}$

$69 = 50 + 10 + 5 + 2 + 2 \text{ } \pounds 5 \text{ coins}$

Re 1.01 = $50 + 25 + 10 + 10 + 2 + 2 + 2 \text{ } \pounds 7 \text{ coins}$

Thus a total 19 coins would be required.

Solutions for Questions 6–9:

The basic information may be summarised as:

Order of coming	1st	2nd	3rd	Last
Husband name				Sunil
Wife name				
Children details				1 kid

This is about the only direct clue in the question. Thus, we need to focus on the indirect clues to move further.

The first thing we should do perhaps is to collate the 4 names of men and women.

The four men are: Anil, Raj, Sunil and Raman.

The four women are: Shanthi, Sridevi, Joya and Anita.

From the second and the 7th clues together we get the information of the order of arrival of the women.

Shanthi who does not have any kids reached just before Sridevi AND Joya came before Shanthi and met Anita when she reached the venue.

Anita-Joya-Shanthi-Sridevi.

The table now becomes:

Order of coming	1st	2nd	3rd	Last
Husband name				Sunil
Wife name	Anita	Joya	Shanthi	Sridevi
Children details			No kids	1 kid

After this we start looking at the other clues to see which of those fit directly into the given situation.

Using the first and the sixth clues:

The table now becomes:

Order of coming	1st	2nd	3rd	Last
Husband name				Sunil
Wife name	Anita	Joya	Shanthi	Sridevi
Children details	At least 1 daughter	2 kids	No kids	1 kid (daughter)

Also given that Anil and Raj are fathers, and Anil is not the husband of Joya we further transform the table:

Order of coming	1st	2nd	3rd	Last
Husband name	Anil	Raj	Raman	Sunil

Wife name	Anita	Joya	Shanthi	Sridevi
Children details	At least 1 daughter	2 kids	No kids	1 kid (daughter)

The answers can be read off the table:

- Shanthi
- Sunil and Sridevi
- Sunil and Anil
- Raj’s

Solutions for Questions 10–13:

The table for the given situation can be constructed in the following order of logic. (The numberings in the table represent the order in which the respective deductions have been made.)

Left of corridor (2.A) 3.D opposite of C) (4.F Same side as A)	8.D (C and D have to face each other)	9. A	7. F (not opposite E and further down the corridor than A)
Corridor	Corridor	Corridor	Corridor
Right of corridor (1.B, C) (5.E, Opposite side to F)	8. C	6. E (Not a corner office)	10.B

The answers can be read off from the above table:

- C
- E
- A only
- B

Solutions for Questions 14–17:

The 7 faculty members are:
JC, JP, SM, SS, DG, PK and VR.

Based on the clues we can make the following structure for the coming and going of the 7 faculty members.

Entry	JC	SS	SM	DG			JP & VR		DG		PK		
Exit					SM	SS		DG and JC		VR		PK	JP and DG
Deduction from statement of	JC	JC	JC	SM and DG	SM	SS	JP and DG	JC and DG	DG				

The answers can be read off from the table.

- DG
- DG
- VR met JP, JC and DG. He did not meet SS, SM and PK.
- JP and DG
- In order to solve this question, we are first bothered about the number of runs scored by each.

From the basic information in the question, we know that Aakash scored 50 runs.

We can make a mental table of each player's performance based on the available information:

	Aakash	Biplab	Chirag
Runs scored	50	?	?
Catches taken	2		0
Catches dropped	n	$n + 2$	2

Minimum value of $n = 1$.

The above table is the summary of the basic information provided in the question.

Checking for sufficiency of information based on Statement A:

We get that Chirag and Biplab scored 35 and 50 runs respectively. Since Aakash also has the same number of runs as Biplab one of them should be the man of the match and this has to be decided on the basis of who amongst them took the higher number of catches. This information is not available for us; hence statement A is not sufficient to answer the question asked.

From Statement B alone we again do not have enough information to answer the question asked because we do not know the runs scored by each if we are to consider only this statement.

From Both statements we first know the number of runs scored by each and we also know that Biplab drops 3 catches, and Aakash drops 1 catch. However we still do not know how many Biplab has taken. Thus, the question cannot be answered.

19. The basic information can be summarised as:

Rank	Ruled Out	Possible
First	A	B, C, D
Second	B	A, C, D
Third	C	A, B, D
Fourth	D	A, B, C

From statement A, we see that

Rank	Ruled Out	Possible
First	A	Deduction 2: B
Second	B	Deduction 1: C
Third	C	Deduction 4: D
Fourth	D	Deduction 3: A

We get the information about all the ranks and this statement alone is sufficient to answer the

question.

From statement B, we see that

Rank	Ruled Out	Possible
First	A	Deduction 4: B
Second	B	Deduction 3: C
Third	C	Deduction 2: D
Fourth	D	Deduction 1: A

We get the information about all the ranks and this statement alone is sufficient to answer the question.

Solutions for Questions 20–24:

The first thing you should get a hang of while trying this question is that there are essentially two ways of forming an answer key:

1. **If you have 1 source:** All you do is carry forward that source's answer key and introduce 1 error from your own side in it. Thus, if the mastermind is your key then you would have 1 error in your answer key, which you would have introduced yourself. (Note this is the only way of someone having an answer key with no blanks and 1 wrong answer only).

Similarly, if a person had a source who had 1 wrong answer in his answer key, you would have 2 wrong answers—1 carried over and another one introduced by you.

Thus, in essence you would carry forward the entire answer key of your source (blanks and wrongs as it is) and add one wrong answer of your own.

2. **If you had 2 sources:**
 - (a) **Blank introduced** if you have two different answers for the same question in the answer keys of the two sources. This means that if for one answer, one of the two sources had a right answer and the other had a wrong answer, then a blank would be introduced. Even if one of them had a blank and the other one had a correct or a wrong answer, it would still be a blank.
 - (b) **Wrong answer carried forward:** If both sources had the same wrong answer, that wrong answer would be carried forward.

And according to the basic situation of the question, one new wrong answer of his own would also be carried forward.

The following table shows the first set of deductions:

Name	Wrong Answer(s)	Blank Answer(s)	Deduction about source	Deduction about wrong answer introduced
A	46	—	Mastermind	46
B	96	46, 90, 25		
C	27, 56	17, 46, 90		

D	17	—	Mastermind	17
E	46, 90	—	Single Source A	90
F	14, 46	92, 90		
G	25	—	Mastermind	25
H	46, 92	—	Single Source A	92
I	27	17, 46, 90		

We now need to think of the remaining people in the group:

B—His answer key is possible if his sources are E and G. In such a case he would get blanks for 25, 46 and 90 (since the answers would be different for these questions in both the sources).

New wrong answer introduced would be 96.

F—His answer key is possible if his sources are E and H. This would give us blank answers as 90 and 92, the wrong answer 46 would be carried forward and 14 would be the new wrong answer introduced by him.

The table would now look like:

Name	Wrong Answer(s)	Blank Answer(s)	Deduction about source	Deduction about wrong answer introduced
A	46	—	Mastermind	46
B	96	46, 90, 25	Two Sources: E and G	
C	27, 56	17, 46, 90		
D	17	—	Mastermind	17
E	46, 90	—	Single Source A	90
F	14, 46	92, 90	Two Sources E and H	
G	25	—	Mastermind	25
H	46, 92	—	Single Source A	92
I	27	17, 46, 90		

We now need to think about C and I.

Looking at C and I’s answer keys it is evident that C would have I as a source.

I’s answer key can be explained as: Two sources D and E.

Name	Wrong Answer(s)	Blank Answer(s)	Deduction about source	Deduction about wrong answer introduced
A	46	—	Mastermind	46
B	96	46, 90, 25	Two Sources: E and G	96

C	27, 56	17, 46, 90	Single source I	56
D	17	—	Mastermind	17
E	46, 90	—	Single Source A	90
F	14, 46	92, 90	Two Sources E and H	14
G	25	—	Mastermind	25
H	46, 92	—	Single Source A	92
I	27	17, 46, 90	D and E	27

The answers would be read off the table:

20. B
21. For C to make his answer key, I has to make his answer key. For I, D and E have to make his answer key. For E to make his answer key, A should make his answer key before that. Thus, A, D, E and I should make their answer keys before C makes his. Thus, option (c) is correct.
22. None of the nine.
23. F introduced the wrong answer to question 14.
24. A, D and G had the same source—the mastermind. E and H had the same source—A. Thus option (d) is correct.
25. The least percentage of people with all 4 gadgets would happen if all the employees who are not having any one of the four objects is mutually exclusive.

Thus, $100 - 30 - 25 - 20 - 15 = 10$

Solutions for Questions 26 and 27:

According to the situation in the problem, we should realise that there is a clash in the routes of:

Congress and BJP (as both use DE route);

BJP and SP (as they use the AB route);

SP and BSP (as they use the CE route);

Congress and CPM (as they use the AC route)

Also, BJP cannot take out the procession on Thursday as they are using the BD route which is not available on Thursday. Thus they would need to be accommodated on Friday. So, Congress would be given a date on Thursday and consequently CPM would get Friday. Also since BJP is on Friday, SI would be on Thursday and hence BSP would go on Friday.

The answers are:

26. (a)

27. (d)

CAT 2003 Cancelled

- A test has 50 questions. A student scores 1 mark for a correct answer, $-\frac{1}{3}$ for a wrong answer, and $-\frac{1}{6}$ for not attempting a question. If the net score of a student is 32, the number of questions answered wrongly by that student cannot be less than:
 - 6
 - 12
 - 3.3
 - 9
- A leather factory produces two kinds of bags, standard and deluxe bags. The profit margin is ` 20 on a standard bag and ` 30 on a deluxe bag. Every bag must be processed on machine A and on machine B. The processing time per bag on the two machines are as follows:

Time required (Hours/bags)

	Machine A	Machine B
Standard Bag	4	6
Deluxe Bag	5	10

The total time available on machine A is 700 hours and on machine B is 1250 hours. Among the following production plans, which one meets the machine availability constraints and maximises the profit?

- Standard 75 bags, Deluxe 80 bags
- Standard 100 bags Deluxe 60 bags
- Standard 50 bags, Deluxe 100 bags
- Standard 60 bags, Deluxe 90 bags

Directions for Questions 3 and 4: Answer the questions on the basis of the information given below. New Age Consultants have three consultants Gyani, Medha and Buddhi. The sum of the number of projects handled by Gyani and Buddhi individually is equal to the number of projects in which Medha

is involved. All three consultants are involved together in 6 projects. Gyani works with Medha in 14 projects. Buddhi has 2 projects with Medha but without Gyani, and 3 projects with Gyani but without Medha. The total number of projects for New Age Consultants is one less than twice the number of projects in which more than one consultant is involved.

3. What is the number of projects in which Gyani alone is involved?
- (a) Uniquely equal to zero

(b) Uniquely equal to 1

(c) Uniquely equal to 4

(d) Cannot be determined uniquely
4. What is the number of projects in which Medha alone is involved?
- (a) Uniquely equal to zero

(b) Uniquely equal to 1

(c) Uniquely equal to 4

(d) Cannot be determined

Directions for Questions 5 and 6: Answer the questions on the basis of the information given below.
A certain perfume is available at a duty-free shop at the Bangkok international airport. It is priced in the Thai currency Baht but other currencies are also acceptable. In particular, the shop accepts Euro and US Dollar at the following rates of exchange:

US Dollar 1 = 41 Bahts; Euro 1 = 46 Bahts

The perfume is priced at 520 Bahts per bottle. After one bottle is purchased, subsequent bottles are available at a discount of 30%. Three friends S, R and M together purchase three bottles of the perfume, agreeing to share the cost equally. R pays 2 Euros. M pays 4 Euros and 27 Thai Bahts and S pays the remaining amount in US Dollars.

5. How much does R owe to S in Thai Baht?
- (a) 428

(b) 416

(c) 334

(d) 324
6. How much does M owe to S in US Dollars?
- (a) 3

(b) 4

(c) 5

(d) 6

Directions for Questions 7 to 9: Answer the questions on the basis of the information given below.
Table A below provides data about ages of children in a school. For the age given in the first column, the second column gives the number of children not exceeding that age. For example, first entry indicates that there are 9 children aged 4 years or less. Tables B and C provide data on the heights and weights respectively of the same group of children in a similar format. Assuming that an older child is always taller and weighs more than a younger child, answer the following questions.

Table A

Table B

Table C

Age (Years)	Number	Height (Cm)	Number	Weight (Kg)	Number
4	9	115	6	30	8
5	12	120	11	32	13
6	22	125	24	34	17
7	35	130	36	36	28
8	42	135	45	38	33
9	48	140	53	40	46
10	60	145	62	42	54
11	69	150	75	44	67
12	77	155	81	46	79
13	86	160	93	48	91
14	100	165	100	50	100

7. What is the number of children of age 9 years or less whose height does not exceed 135 cm?
 (a) 48 (b) 45
 (c) 3 (d) Cannot be determined.
8. How many children of age more than 10 years are taller than 150 cm and do not weigh more than 48 kg?
 (a) 16 (b) 40
 (c) 9 (d) Cannot be Determined.
9. Among the children older than 6 years but not exceeding 12 years, how many weigh more than 38 kg?
 (a) 34 (b) 52
 (c) 44 (d) Cannot be Determined

Directions for Questions 10 and 11: Answer the questions on the basis of the information given below.

The Head of a newly formed government desires to appoint five of the six elected members A, B, C, D, E and F the portfolios of Home, Power, Defence, Telecom and Finance. F does not want any portfolio if D gets one of the five. C wants either Home or Finance or no portfolio. B says that if I gets either Power or Telecom then she must get the other one. E insists on a portfolio if A gets one.

10. Which is a valid assignment?
 (a) A-Home, B-Power, C-Defence, D-Telecom, E-Finance.
 (b) C-Home, D-Power, A-Defence, B-Telecom, E-Finance.
 (c) A-Home, B-Power, E-Defence, D-Telecom, F-Finance.

(d) B-Home, F-Power, E-Defence, C-Telecom, A-Finance.

11. If A gets Home and C gets Finance, then which is NOT a valid assignment for Defence and Telecom?
- (a) D-Defence, B-Telecom.
 - (b) F-Defence, B-Telecom.
 - (c) B-Defence, E-Telecom.
 - (d) B-Defence, D-Telecom.

Directions for Questions 12–14: In each question there are two statements A and B.

Choose (a) if the question can be answered by one of the statements alone but not by the other.

Choose (b) if the question can be answered by using either statement alone.

Choose (c) if the question can be answered by using both the statements together but cannot be answered using either statement alone.

Choose (d) if the question cannot be answered even by using both the statements A and B.

12. F and M are father and mother of S, respectively. S has four uncles and three aunts. F has two siblings. The siblings of F and M are unmarried. How many brothers does M have?
- (a) F has two brothers.
 - (b) M has five siblings.
13. A game consists of tossing a coin successively. There is an entry fee of ` 10 and an additional fee of ` 1 for each toss of the coin. The game is considered to have ended normally when the coin turns heads on two consecutive throws. In this case the player is paid ` 100. Alternatively, the player can choose to terminate the game prematurely after any of the tosses. Ram has incurred a loss of ` 50 by playing this game. How many times did he toss the coin?
- A. The game ended normally.
 - B. The total number of tails obtained in the game was 138.
14. Each packet of soap costs ` 10. Inside each packet is a gift coupon labelled with one of the letters S, O, A and P. If a customer submits four such coupons that make up the word Soap, the customer gets a free Soap packet. Ms. X kept buying packet after packet of Soap till she could get one set of coupons that formed the word Soap. How many coupons with label P did she get in the above process?
- (a) The last label obtained by her was S and the total amount spent was ` 210.
 - (b) The total number of vowels obtained was 18.

Directions for Questions 15–17: Answer the questions on the basis of the information given below.

A, B, C, D, E and F are a group of friends. There are two housewives, one professor, one engineer, one accountant and one lawyer in the group. There are only two married couples in the group. The lawyer is married to D, who is a housewife. No woman in the group is either an engineer or an accountant. C, the accountant, is married to F, who is a professor. A is married to a housewife. E is not a housewife.

15. Which of the following is one of the married couples?

(a) A & B

(b) B & E

(c) D & E

(d) A & D

16. What is E's profession?

(a) Engineer

(b) Lawyer

(c) Professor

(d) Accountant

17. How many members of the group are males?

(a) 2

(b) 2

(c) 3

(d) Can not be determined

Directions for Questions 18 and 19: Answer the questions on the basis of the information given below.

Some children were taking free throws at the basketball court in school during lunch break. Below are some facts about how many baskets these children shot.

(i) Ganesh shot 8 baskets less than Ashish.

(ii) Dhanraj and Ramesh together shot 37 baskets.

(iii) Jugraj shot 8 baskets more than Dhanraj.

(iv) Ashish and Ganesh together shot 40 baskets.

(v) Ashish shot 5 baskets more than Dhanraj.

18. Which of the following statements is true?

(a) Ramesh shot 18 baskets and Dhanraj shot 19 baskets.

(b) Ganesh shot 24 baskets and Ashish shot 16 baskets.

(c) Jugraj shot 19 baskets and Dhanraj shot 27 baskets.

(d) Dhanraj shot 11 baskets and Ashish shot 16 baskets.

19. Which of the following statements is true?

(a) Dhanraj and Jugraj shot 46 baskets.

(b) Ganesh shot 18 baskets and Ramesh shot 21 baskets.

(c) Dhanraj shot 3 more baskets than Ramesh.

(d) Ramesh and Jugraj together shot 29 baskets.

Directions for Questions 20–22: Answer the questions on the basis of the information given below.

Seven varsity basketball players (A, B, C, D, E, F and G) are to be honored at a special luncheon. The players will be seated on the dais in a row. A and G have to leave the luncheon early and so must be seated at the extreme right. B will receive the most valuable player's trophy and so must be in the centre to facilitate presentation. C and D are bitter rivals and therefore must be seated as far apart as possible.

20. Which of the following cannot be seated at either end?

(a) C

(b) D

(c) F

(d) G

21. Which of the following pairs cannot be seated together?
- (a) B & D (b) C & F
(c) D & G (d) E & A
22. Which of the following pairs cannot occupy the seats on either side of B?
- (a) F & D (b) D & E
(c) E & G (d) C & F

Directions for Questions 23–25: Answer the questions on the basis of the information given below.

Five women decided to go shopping to M.G. Road, Bangalore.

They arrived at the designated meeting place in the following order:

1. Archana, 2. Chellamma, 3. Dhenuka, 4. Helen, and 5. Shahnaz.

Each woman spent at least ` 1000. Below are some additional facts about how much they spent during their shopping spree.

The woman who spent ` 2234 arrived before the lady who spent ` 1193.

One woman spent ` 1340 and she was not Dhenuka.

One woman spent ` 1378 more than Chellamma.

One woman spent ` 2517 and she was not Archana.

Helen spent more than Dhenuka.

Shahnaz spent the largest amount and Chellamma the smallest.

23. The woman who spent ` 1193 is
- (a) Archana (b) Chellamma
(c) Dhenuka (d) Helen
24. What was the amount spent by Helen?
- (a) ` 1193 (b) ` 1340
(c) ` 2234 (d) ` 2517
25. Which of the following amounts was spent by one of them?
- (a) ` 1139 (b) ` 1378
(c) ` 2571 (d) ` 2718

Directions for Questions 26–28: Answer the questions on the basis of the information given below.

Five friends meet every morning at Sree Sagar restaurant for an idli-vada breakfast. Each consumes a different number of idlis and vadas. The number of idlis consumed are 1, 4, 5, 6 and 8, while the number of vadas consumed are 0, 1, 2, 4, and 6. Below are some more facts about who eats what and how much.

- (i) The number of vadas eaten by Ignesh is three times the number of vadas consumed by the person who eats four idlis.
- (ii) Three persons, including the one who eats four vadas, eat without chutney.

- (iii) Sandeep does not take any chutney.
- (iv) The one who eats one idli a day does not eat any vadas or chutney. Further, he is not Mukesh.
- (v) Daljit eats idli with chutney and also eats vada.
- (vi) Mukesh, who does not take chutney, eats half as many vadas as the person who eats twice as many idlis as he does.
- (vii) Bimal eats two more idlis than Ignesh, but Ignesh eats two more vadas than Bimal.
26. Which of the following statements is true?
- Sandeep eats 2 vadas.
 - Mukesh eats 4 vadas.
 - Ignesh eats 6 vadas.
 - Bimal eats 4 vadas.
27. Which one of the following statements is true?
- Daljit eats 5 idlis.
 - Ignesh eats 8 idlis.
 - Bimal eats 1 idli.
 - Bimal eats 6 idlis.
28. Which of the following statements is true?
- Mukesh eats 8 idlis and 4 vadas but no chutney.
 - The person who eats 5 idlis and 1 vada does not take chutney.
 - The person who eats equal number of vadas and idlis also takes chutney.
 - The person who eats 4 idlis and 2 vadas also takes chutney.

Answer Key

1. (c)	2. (a)	3. (d)	4. (b)
5. (d)	6. (c)	7. (b)	8. (a)
9. (c)	10. (b)	11. (d)	12. (a)
13. (a)	14. (c)	15. (d)	16. (a)
17. (c)	18. (a)	19. (a)	20. (c)
21. (d)	22. (c)	23. (c)	24. (b)
25. (a)	26. (c)	27. (a)	28. (c)

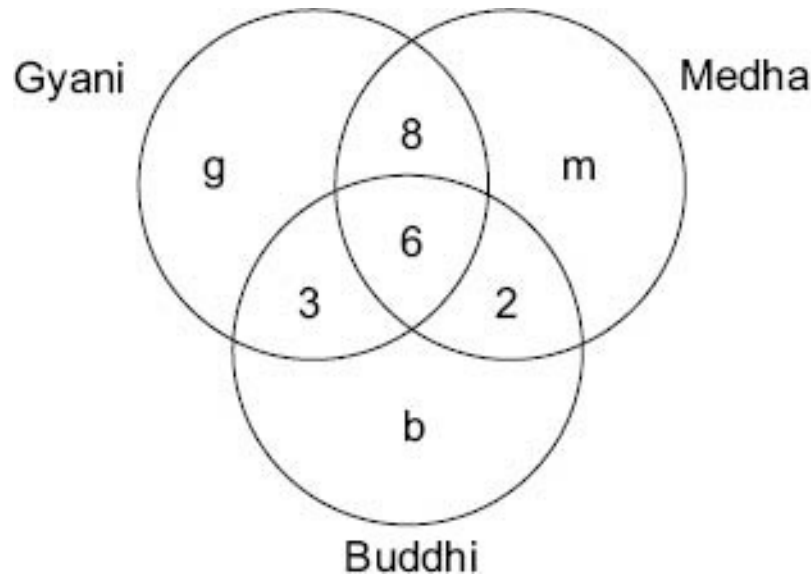
Solutions:

- It is possible to score 32 marks net with 35 corrects, 3 wrongs and 12 not attempted questions. Since, all other options are above 3, only option (c) can be the correct answer.
- Checking the options, it is not possible to produce the number of bags in options (c) and (d) in the given time. Between options (a) and (b), option (a) is more profitable and hence is the

correct answer.

Solutions for Questions 3 and 4:

The following figure can be drawn based on the information provided in the question.



From the figure and the information given in the problem we know that total number of projects = 37. Hence, $g + m + b = 18$ and $g + b = 16 + m$.

- 3 Gyani alone is defined by b and m , which cannot be determined uniquely.
4. Solving the above two expressions for m , we get $18 - m = 16 + m \Rightarrow m = 1$

Solutions for Questions 5 and 6:

The total cost of the three bottles would be $520 + 364 + 364 = 1248$. Hence, the cost per person would be 416 bahts.

5. Since R has paid only 2 Euros (an equivalent of 92 bahts), he would have to further pay 324 bahts more. Option (d) is correct.
6. M has paid 4 Euros + 27 bahts which adds up to 211 bahts. So he has to pay 205 bahts to S. This would convert to 5 US Dollars.

Solutions for Questions 7–9:

In order to solve this set of questions, you need to understand what the data in the tables mean. The basic interpretation of the table is that there are 6 children of height 115 cms or less and 11 children of height 120 cms or less. This also gives us that there are 5 children who have a height of above 115 cms but below 120 cms. Similarly there are 13 children having a height between 120 cms to 125 cms. The other thing you need to understand about this situation is that since an older child is always taller and weighs more than a younger child, you would first fit all the least heights and weights with the youngest children.

Based on this understanding of the data in the table, we can move into the questions:

7. There are a total of 48 children aged below 9 years. Also there are a total of 45 children having a height less than 135 cms. Thus, all these 45 children would have been below 9 years of age. Hence 45 is the correct answer.
8. There are 40 children above 10 years of age. But there are only 25 children having a height

greater than 150 cms. Thus, there would be 25 children who would have a height of over 150 cms and an age of over 10 years. We now need to see how many of these 25 also satisfy the criteria of less than 48 kg of weight. There are 9 children above 48 kg of weight. These should also be amongst the 25 we have earmarked above 10 years and 150 cms. Thus, there would be 16 children left in the category defined. Thus, option (a) is correct.

9. There are 55 students who are aged between 6 and 12. Also, there are 23 children who are above 12 years of age. Naturally these 23 would be in the highest weight categories from the top. So looking down the weights column, there are 33 children who are below 38 kgs and do not come under this category. So out of 67 children who are above 38 kgs, 23 would not be between 6 to 12 years. Thus, there would be 44 children in the category being defined.

Solutions for Questions 10 and 11:

The following constraints operate in the question-

- (a) We have to take only one of D and F. This also consequently means that each of A, B, C and E should be selected for a portfolio.
 - (b) C has to be given Home or Finance.
 - (c) B's condition is more open than C's and is dependent on what (and whether D gets anything.) So if D is power or telecom- then B is the other of these two portfolios. i.e if D get telecom, B must be given Power and vice versa. However, if D is not getting either of these two portfolios then B has no constraint.
 - (d) A and E must be part of the ministry.
10. In order to find the correct answer, we need to see each of the options for any rules they might be violating.
- (a) Is rejected because C has to be given Home or Finance only – but in this case C is getting defence. So that condition is violated here.
 - (b) Does not contravene any condition.
 - (c) D and F are selected together. Hence, the option is not valid.
 - (d) C is not getting Home or finance.

Thus Option (b) is correct as it meets all conditions.

1. Option (d) is clearly not valid as D is given telecom but B is not getting Power.

Solutions for Questions 12–14:

12. From the first statement alone, we can answer the question asked as once we know that F has 2 brothers, we can deduce that M must also have 2 brothers.

From the second statement we cannot answer the question asked. Thus we should mark option (a).

13. A loss of ` 50 could mean two things: 1) If the game ended normally or if the game was terminated by the player. In both cases the number of coin tosses would be different. Since statement 1 defines how the game ended, we can define the number of tosses the player must have made uniquely.

From the second statement alone we cannot decipher how many heads must have occurred.

Thus, only statement 1 is sufficient to answer the question asked.

14. We do not getting enough information from statement 1 above or statement 2 alone. If we try to use statement 1 alone, we get that she bought 21 packets, out of which the last packet contained the first S. The remaining 20 packets must have had Os, As and Ps. There is no way to tell how many Ps these 20 contained. Thus, Statement 1 alone is not sufficient to answer the question.

If we use statement 2 alone we just know that there were 18 Os and A’s combined. We do not know the total number of packets she bought and also how many S’s she got.

Using both statements 1 and 2 together, we get that there was 1 S, and 18 Os and As combined. Thus there must have been 2 P’s exactly.

Solutions for Questions 15–17:

First of all collate the information of all the clues together.

D—Housewife married to lawyer

Engineer and Accountant are men. C—Accountant (man) married to F (Professor—woman)

A (man) married to a housewife.

Deduction 1: Since, there are 2 housewives and F the professor is also a woman; there are at least 3 women in the group.

Deduction 2: Engineers and Accountant being men and also the lawyer must be a man.

Combining the two deductions, we know that there are 3 men and 3 women in the group.

Men	Women
A (married to housewife)	D (Housewife—married to the Lawyer)
C Accountant	F (Professor)
E (since E is not a housewife, and there is only 1 slot left in the women—that of a housewife, E must be a man.)	Since E is a man, B is a housewife.

At this point we also know that there are only 2 married couples in the group. One of these couples is C-F, and the other couple is the lawyer and D. Since A is married to a housewife, A must be the lawyer.

The table now becomes much more clearer:

Men	
A (Lawyer) – D Housewife	Couple 1
C Accountant – F professor	Couple 2
E man Engineer	
B woman Housewife—but her husband does not belong to the group	

15. A and D are a married couple.

16. E is an engineer.
17. There are 3 males, as already deduced.

Solutions for Questions 18 and 19:

We know the following equations:

$$G = A - 8 \quad (1)$$

$$D + R = 37 \quad (2)$$

$$J = D + 8 \quad (3)$$

$$A + G = 40 \quad (4)$$

$$A = D + 5 \quad (5)$$

From 1 and 4, we get $A = 24$ and $G = 16$.

So, $D = 19$, $J = 27$ and $R = 18$

18. Option (a) is correct.
19. $D + J = 46$. Thus, Option (a) is correct.

Solutions for Questions 20—22:

From the clues we can make the following structure:

A/G	G/A	C/D	B			D/C

Note the following:

While creating this seating arrangement, right is seen from the seated player's perspective and not from the audience's perspective. Once we block seats for A, B and G, to keep C and D as far apart as possible, the shown arrangement is the only way of placing C and D.

From this figure we can answer the questions that follow:

20. Either end cannot be occupied by F.
21. B & D is possible to be seated together. So also are C and F, and D and G. The only option of two people who can not be placed together is E and A. Hence option (d) is correct.
22. One of the seats (to the right of B) has to be taken by either C or D. The left side of B has to be taken by one of E and F. Thus, options (a), (b) and (d) are possible for people seated adjacent to B. But, we cannot place the pair of E and G on either side of B at the same time. Hence option (c) is correct.

Solutions for Questions 23—25:

From the clues we can make the following deductions:

1. Somebody spent 2234 and someone else spent 1193. (Also, 2234 arrived before 1193).
2. Someone spent 1340 (not Dhenuka).
3. Someone spent 2517 (not Archana).
4. Chellamma + 1378 was another spending amount.
5. Shahnaz spent the largest amount and Chellamma the least.

From the foregoing, it is clear that we know 4 amounts precisely—

2517
2234
1340
1193

This gives rise to two possibilities, considering the fact that there is a difference of 1378 between Chellamma and someone else. Also, before we look at those possibilities, we should also realise that the span between the highest and the lowest numbers in the table above is less than 1378; hence this difference of 1378 must be between the least and the highest numbers. Thus, Chellamma + 1378 = Shahnaz.

Possibility 1:

If 1193 is the least spending:

2571 (got by 1193+1378)	Shahnaz	Fixed
2517	A/D/H	Default possibility before using any clues
2234	A/D/H	
1340	A/D/H	
1193	Chellamma	Fixed

Using 1340 is not Dhenuka and 2517 is not Archana. Also using the information that 2234 came before 1193 (which means that 2234 must be Archana as Chellamma has spent 1193) in this case, we get

2571 (got by 1193+1378)	Shahnaz
2517	D
2234	A
1340	H
1193	Chellamma

But this contradicts the clue that Helen spent more than Dhenuka as in this case Helen (1340) < Dhenuka (2517).

Thus we reject this possibility and go to the second possibility.

Possibility 2:

If 2517 is the highest spending then we get the following table:

2517	Shahnaz	Fixed
2234	A/D/H	Default possibility before using any clues
1340	A/D/H	
1193	A/D/H	

1139 (got by 2517-1378)	Chellamma	Fixed

Using 1340 is not Dhenuka and 2517 is not Archana:

2517	Shahnaz
2234	A/D/H
1340	A/H
1193	A/D/H
1139 (got by 2517-1378)	Chellamma

Further, since Helen spent more than Dhenuka, Dhenuka cannot be put at 2234. At this point we realise that A and H are shared between 2234 and 1340. Thus, D becomes equal to 1193 and since 2234 comes before 1193, it must be the case that 2234 is Archana.

2517	Shahnaz
2234	Archana
1340	Helen
1193	Dhenuka
1139 (got by 2517-1378)	Chellamma

In this situation we can see that there is no contradiction. We can then mark the answers to the questions asked.

- 23. Dhenuka
- 24. 1340. Hence option (b) is correct.
- 25. 1139

Solutions for Questions 26–28:

In order to solve this set of questions, first of all use the basic information in order to get the following starting table where nothing is matched with each other:

Person	Vadas	Idlis
Sandeep (S)	1	0
Ignesh (I)	4	1
Mukesh (M)	5	2
Daljit (D)	6	4
Bimal (B)	8	6

Looking at the clues we can make the following deductions:

1. From the first clue $\neg$ Ignesh = 6 **Vadas and someone ate 2 Vadas and 4 idlis.**
2. From the third clue $\neg$ Somebody ate 0 **Vadas and 1 idli and no chutney.**
3. From clue 7 $\neg$ Bimal eats 4 Vadas.

Putting these deductions into the table we get:

	Vadas	Idlis	
Not Mukesh, also cannot be Ignesh or Bimal; so is either Sandeep or Daljit. From the fifth clue it also cannot be Daljit. Hence this has to be Sandeep.	0	1	Idlis and Vadas matched
Default options I/D/M/B. But cannot be Ignesh and Bimal as the number of Vadas do not tally. So this has to be either D/M.	2	4	Idlis and Vadas matched
	1	?	
Bimal	4	?	
Ignesh	6	?	
	?	5	
	?	6	
	?	8	

At this point if you use the 7th clue you would realise that the only way this can be fit into the current table is to use 4-8 for Bimal and 6-6 for Ignesh. Also, using the 6th clue we would get that 2-4 would be possible only for Mukesh.

The table would then become:

	Vadas	Idlis
Sandeep (no chutney)	0	1
Mukesh (no chutney)	2	4
Daljit	1	5
Bimal (no chutney)	4	8
Ignesh	6	6

The answers can be read off the table now:

26. Option (c) is correct.
27. Option (a) is correct.
28. Option (c) is correct.

Directions for Questions 1–4: Each item is followed by two statements, A and B. Answer each question using the following instructions.

Choose A if the question can be answered by one of the statements alone but not by the other.

Choose B if the question can be answered by using either statement alone.

Choose C if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

Choose D if the question cannot be answered by either of the statements.

1. In a hockey match, the Indian team was behind by 2 goals with 5 minutes remaining. Did they win the match?
 - A. Deepak Thakur, the Indian striker, scored 3 goals in the last five minutes of the match.
 - B. Korea scored a total of 3 goals in the match.

(a) 1	(b) 2
(c) 3	(d) 4
2. Four students were added to a dance class. Would the teacher be able to divide her students evenly into a dance team (or teams) of 8?
 - A. If 12 students were added, the teacher could put everyone in teams of 8 without any leftovers.
 - B. The number of students in the class is currently not divisible by 8.

(a) 1	(b) 2
(c) 3	(d) 4
3. People in a club either speak French or Russian or both. Find the number of people in the club who speak only French.
 - A. There are 300 people in the club and the number of people who speak both French and

Russian is 196.

B. The number of people who speak only Russian is 58.

(a) 1

(b) 2

(c) 3

(d) 4

4. A sum of ₹ 38,500 was divided among Jagdish, Punit and Girish. Who received the minimum amount?

A. Jagdish received $\frac{2}{9}$ of what Punit and Girish together received.

B. Punit received $\frac{3}{11}$ of what Jagdish and Girish together received.

(a) 1

(b) 2

(c) 3

(d) 4

Directions for Questions 5–10: Answer the questions independent of each other.

5. Four students (Ashish, Dhanraj, Felix and Sameer) sat for the Common Entrance Exam for Management (CEEM).

One student got admission offers from three National Institutes of Management (NIM), another in two NIMs, the third in one NIM, while the fourth got none. Below are some of the facts about who got admission offers from how many NIMs and what is their educational background.

(i) The one who is an engineer didn't get as many admissions as Ashish.

(ii) The one who got offer for admissions in two NIMs isn't Dhanraj nor is he a chartered accountant.

(iii) Sameer is an economist.

(iv) Dhanraj isn't an engineer and received more admission offers than Ashish.

(v) The medical doctor got the most number of admission offers.

Which one of the following statements is necessarily true?

(a) Ashish is a chartered accountant and got offer for admission in three NIMs.

(b) Dhanraj is a medical doctor and got admission offer in one NIM.

(c) Sameer is an economist who got admission offers in two NIMs.

(d) Felix who is not an engineer did not get any offer for admission.

6. Five boys went to a store to buy sweets. One boy had ₹ 40. Another boy had ₹ 30. Two other boys had ₹ 20 each. The remaining boy had ₹ 10. Below are some more facts about the initial and final cash positions.

(i) Alam started with more money than Jugraj.

(ii) Sandeep spent ₹ 1.50 more than Daljeet.

(iii) Ganesh started with more money than only one other person.

(iv) Daljeet started with $\frac{2}{3}$ of what Sandeep started with.

(v) Alam spent the most, but did not end with the least.

(vi) Jugraj spent the least and ended with more than Alam or Daljeet.

(viii) Alam spent 10 times more than what Ganesh did.

In the choices given below, all statements except one are false. Which one of the following statements can be true?

(a) Alam started with ₹ 40 and ended with ₹ 9.50.

(b) Sandeep started with ₹ 30 and ended with ₹ 1.00.

(c) Ganesh started with ₹ 20 and ended with ₹ 4.00.

(d) Jugraj started with ₹ 10 and ended with ₹ 7.00.

7. In a hospital there were 200 Diabetes, 150 Hyperglycemia and 150 Gastroenteritis patients. Of these, 80 patients were treated for both Diabetic and Hyperglycemia. Sixty patients were treated for Gastroenteritis and Hyperglycemia, while 70 were treated for Diabetes and Gastroenteritis. Some of these patients have all the three diseases. Doctor Dennis treats patients with only Diabetes. Doctor Hormis treats patients with only Hyperglycemia and Doctor Gerard treats patients with only Gastroenteritis. Doctor Paul is a generalist. Therefore, he can treat patients with multiple diseases. Patients always prefer a specialist for their disease. If Dr. Dennis had 80 patients, the other three doctors can be arranged in terms of the number of patients treated as:

(a) Paul > Gerard > Hormis

(b) Paul > Hormis > Gerard

(c) Gerard > Paul > Hormis

(d) none of these

8. Three children won the prizes in the Bournvita Quiz contest. They are from the schools: Loyola, Convent, Little Flowers, which are located in different cities. Below are some of the facts about the schools, the children and the city they are from.

* One of the children is Bipin.

* Loyola School's contestant did not come first.

* Little Flower's contestant was named Riaz.

* Convent School is not in Hyderabad.

* The contestant from Pune took third place.

* The contestant from Pune is not from Loyola School.

* The contestant from Bangalore did not come first.

* Convent School's contestant's name is not Balbir.

Which of the following statements is true?

- (a) 1st prize: Riaz (Little Flowers), 2nd prize: Bipin (Convent), 3rd prize: Balbir (Loyola).
 (b) 1st prize: Bipin (Convent), 2nd prize: Riaz (Little Flowers), 3rd prize: Balbir (Loyola).
 (c) 1st prize: Riaz (Little Flowers), 2nd prize: Balbir (Loyola), 3rd prize: Bipin (Convent).
 (d) 1st prize: Bipin (Convent), 2nd prize: Balbir (Loyola), 3rd prize: Riaz (Little Flowers).
9. Two boys are playing on a ground. Both the boys are less than 10 years old. Age of the younger boy is equal to the cube root of the product of the age of the two boys. If we place the digit representing the age of the younger boy to the left of the digit representing the age of the elder boy, we get the age of the father of the younger boy. Similarly, if we place the digit representing the age of the elder boy to the left of the digit representing the age of the younger boy and divide the figure by 2, we get the age of the mother of the younger boy. The mother of the younger boy is younger than his father by 3 years. Then what is the age of the younger boy?
- (a) 3 (b) 4
 (c) 2 (d) none of these.
10. Flights A and B are scheduled from an airport within the next one hour. All the booked passengers of the two flights are waiting in the boarding hall after check-in. The hall has a seating capacity of 200 out of which 10% remained vacant. 40% of the waiting passengers are ladies. When boarding announcements came, passengers of flights A left the hall and boarded the flight. Seating capacity of each flight is two third of the passengers who waited in the waiting hall for both the flights put together. Half the passengers who boarded flight A are women. After boarding for flight A, 60% of the waiting hall seats became empty. For every twenty of those who are still waiting in the hall for flight B, there is one airhostess in flight A. Then, what is the ratio of empty seats in flight B to the number of airhostesses in flight A?
- (a) 10:1 (b) 5:1
 (c) 20:1 (d) 1:1

Directions for Questions 11–14: Answer these questions based on the information given below.

A country has the following types of traffic signals.

3 red lights = stop;

2 red lights = turn left;

1 red light = turn right;

3 green lights = go at 100 kmph speed;

2 green lights = go at 40 kmph speed;

1 green light = go at 20 kmph speed.

A motorist starts at a point on a road and follows all traffic signals literally. His car is heading towards the north. He encounters the following signals (the time mentioned in each case below is applicable after crossing the previous signal).

Starting Point – 1 green light;

After half an hour, 1st signal – 2 red & 2 green lights;

After 15 minutes, 2nd signal – 1 red light;

After half an hour, 3rd signal – 1 red & 3 green lights;

After 24 minutes, 4th signal – 2 red & 2 green lights;

After 15 minutes, 5th signal – 3 red lights;

11. The total distance travelled by the motorist from the starting point till the last signal is:
- (a) 90 km (b) 100 km
- (c) 120 km (d) None of these
12. What is the position (radial distance) of the motorist when he reaches the last signal?
- (a) 45 km directly north of the Starting Point.
- (b) 30 km directly to the east of the Starting Point.
- (c) 50 km away to the northeast of the Starting Point.
- (d) 45 km away to the northwest of the Starting Point.
13. After the starting point if the 1st signal were 1 red and 2 green lights, what would be the final position of the motorist?
- (a) 30 km to the west and 20 km to the south.
- (b) 30 km to the west and 40 km to the north.
- (c) 50 km to the east and 40 km to the north.
- (d) Directly 30 km to the east.
14. If at the starting point, the car was heading towards south, what would be the final position of the motorist?
- (a) 30 km to the east and 40 km to the south.
- (b) 50 km to the east and 40 km to the south.
- (c) 30 km to the west and 40 km to the south.
- (d) 50 km to the west and 20 km to the north.

Directions for Questions 15 to 17: Answer these questions based on the table given below.

The table below gives information about four different crops, their different quality categories and the regions where they are cultivated. Based on the information given in the table answer the questions below:

Type of Crop	Quality	Region
Crop 1	High	R1, R2, R3, R4, R5
	Medium	R6, R7, R8
	Low	R9, R10, R11
Crop 2	High	R5, R8, R12
	Medium	R9, R13

	Low	R6
Crop 3	High	R2, R6, R7, R13
	Medium	R3, R9, R11
	Low	R1, R4
Crop 4	High	R3, R10, R11
	Medium	R1, R2, R4
	Low	R5, R9

15. How many regions produce medium qualities of Crop-1 or Crop-2 and also produce low quality of Crop-3 or Crop-4?

(a) Zero
(b) One

(c) Two
(d) Three
16. Which of the following statements is true?

(a) All medium quality Crop-2 producing regions are also high quality Crop-3 producing regions.

(b) All high quality Crop-1 producing regions are also medium and low Crop-4 producing regions.

(c) There are exactly four Crop-3 producing regions, which also produce Crop-4 but not Crop-2.

(d) Some Crop-3 producing regions produce Crop-1, but not high quality Crop-2.
17. How many low quality Crop-1 producing regions are either high quality Crop-4 producing regions or medium quality Crop-3 producing regions?

(a) One
(b) Two

(c) Three
(d) Zero
18. Six persons are playing a card game. Suresh is facing Raghubir who is to the left of Ajay and to the right of Pramod. Ajay is to the left of Dhiraj. Yogendra is to the left of Pramod. If Dhiraj exchanges his seat with Yogendra and Pramod exchanges with Raghubir, who will be sitting to the left of Dhiraj?

(a) Yogendra
(b) Raghubir

(c) Suresh
(d) Ajay
19. 10 straight lines, no two of which are parallel and no three of which pass through any common point, are drawn on a plane. The total number of regions (including finite and infinite regions) into which the plane would be divided by the lines is

(a) 56
(b) 255

(c) 1024
(d) not unique

20. Shyam visited Ram on vacation. In the mornings, they both would go for yoga. In the evenings they would play tennis. To have more fun, they indulged only in one activity per day, i.e., either they went for yoga or played tennis each day. There were days when they were lazy and stayed home all day long. There were 24 mornings when they did nothing, 14 evenings when they stayed at home, and a total of 22 days when they did yoga or played tennis. For how many days did Shyam stay with Ram?

- (a) 32 (b) 24
(c) 30 (d) none of these

Directions for Questions 21 and 22: Answer these questions based on the information given below. A boy is asked to put in a basket one mango when ordered 'One', one orange when ordered 'Two', one apple when ordered 'Three' and is asked to take out from the basket one mango and an orange when ordered 'Four'. A sequence of orders is given as:

1 2 3 3 2 1 4 2 3 1 4 2 2 3 3 1 4 1 1 3 2 3 4

21. How many total oranges were in the basket at the end of the above sequence?

- (a) 1 (b) 4
(c) 3 (d) 2

22. How many total fruits will be in the basket at the end of the above order sequence?

- (a) 9 (b) 8
(c) 11 (d) 10

23. Davji Shop sells samosas in boxes of different sizes. The samosas are priced at ` 2 per samosa up to 200 samosas. For every additional 20 samosas, the price of the whole lot goes down by 10 paise per samosa. What should be the maximum size of the box that would maximise the revenue?

- (a) 240 (b) 300
(c) 400 (d) none of these

24. Three travellers are sitting around a fire, and are about to eat a meal. One of them has five small loaves of bread; the second has three small loaves of bread. The third has no food, but has eight coins. He offers to pay for some bread. They agree to share the eight loaves equally among the three travellers, and the third traveller will pay eight coins for his share of the eight loaves. All loaves were the same size. The second traveller (who had three loaves) suggests that he be paid three coins and that the first traveller be paid five coins. The first traveller says that he should get more than five coins. How much should the first traveler get?

- (a) 5 (b) 7
(c) 1 (d) none of these

25. The owner of a local jewellery store hired 3 watchmen to guard his diamonds, but a thief still got in and stole some diamonds. On the way out, the thief met each watchman, one at a time. To each he gave $\frac{1}{2}$ of the diamonds he had then, and 2 more besides. He escaped with one

diamond. How many did he steal originally?

- (a) 40 (b) 36
(c) 25 (d) none of these

Answer Key

1. (d)	2. (a)	3. (c)	4. (c)
5. (c)	6. (d)	7. (a)	8. (c)
9. (c)	10. (a)	11. (a)	12. (c)
13. (a)	14. (c)	15. (b)	16. (d)
17. (c)	18. (c)	19. (d)	20. (c)
21. (d)	22. (c)	23. (b)	24. (b)
25. (b)			

Solutions:

1. Since there is a lower incidence of south, look first for cities in the south and then see whether they lie between 10 to 40 East. There are four such cities; hence 20%.
2. Check for North and then Consonant (in that order it would be easier to check)- there are 10 such cities. Then from the options, check for South and consonants (8). Option (b) is correct.
3. 4:2

Solutions for Questions 1–4:

Theory Point: The beauty of DS questions is that you do not need to solve to get an answer. All you need to see is whether you are getting a unique answer to the question asked or not. The standard process of solving a DS question involves checking individual data sets to see whether you have a unique answer to the question asked.

In a typical DS question, you would need to check three separate data sets—

Data Set 1: Includes the information given in the question statement Plus the information in the first Statement.

Data Set 2: Includes the information given in the question statement Plus the information in the second Statement.

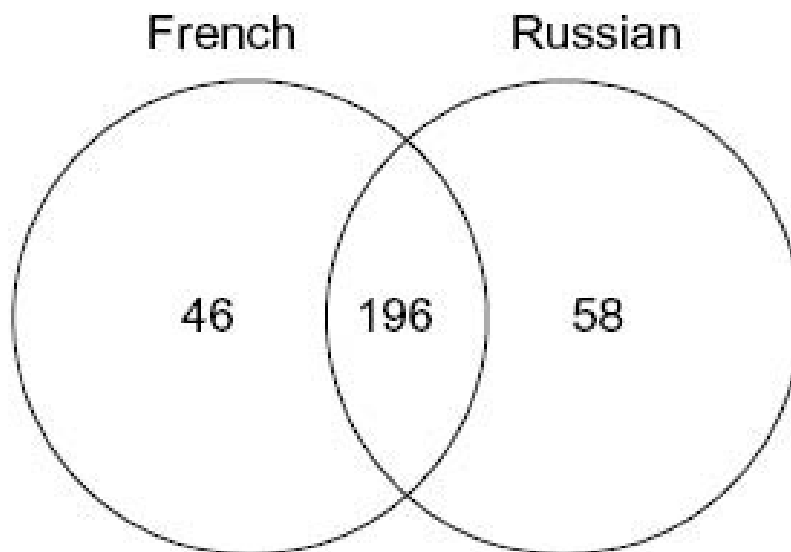
Data Set 3: Includes the information given in the question statement Plus the information in both Statements.

Whenever you are checking for any data set and it's sufficiency, look at whether the information you are checking for is sufficient to answer the question asked, i.e., whether it gives a unique answer to the question asked. A unique answer here means that as far as we are considering the same set of data, we should get only 1 answer to the question asked.

1. From the first statement we cannot determine the answer as we do not know whether Korea

scored any goals. From the second statement alone, the data is again insufficient. Even if we use both A and B we get that there could be two scenarios. If Korea was leading 2-0 the match would be a draw. If Korea was leading 3-1 India would win. Hence, we cannot say for sure whether India won the match or not.

2. A alone is sufficient to answer the question asked—as if adding 12 gives a number divisible by 8, then adding 4 should also do so. B alone is not sufficient to answer the question because the number you get could be or could not be divisible by 8.
3. Using both the statements we would get that there are 46 people who speak only French. (Refer to figure below)



4. Using both the statements we have three unknowns and three unique equations as:
 $J + P + G = 38500$, $J = \frac{2}{9} (P + G)$ and $P = \frac{3}{11} (J + G)$. Solving you can get all the three values.
5. Make the following table to analyse this:

Name	Background	Number of offers
Ashish	Engineer/CA/Economist/Doctor	0/1/2/3
Dhanraj	Engineer/CA/Economist/Doctor	0/1/2/3
Felix	Engineer/CA/Economist/Doctor	0/1/2/3
Sameer	Engineer/CA/Economist/Doctor	0/1/2/3

Using the clues given to eliminate possibilities the following table can be easily arrived at:

Name	Background	Number of offers
Ashish	CA	3
Dhanraj	Doctor	0/1
Felix	Engineer	0/1
Sameer	Economist	2

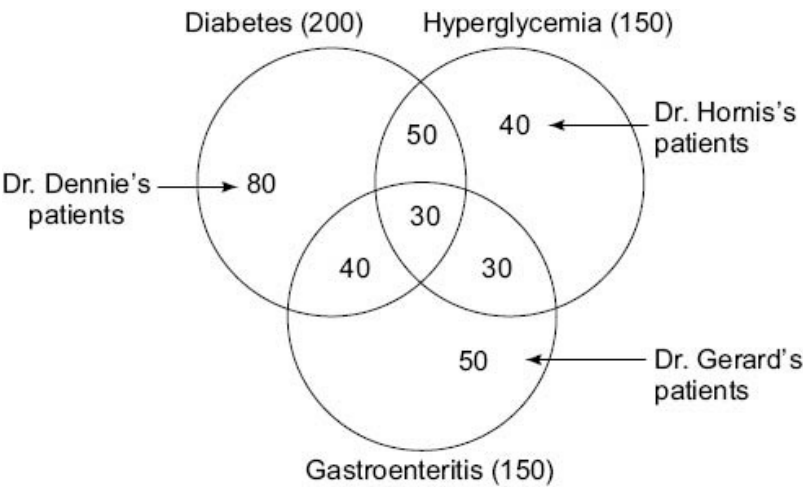
At this point we can see that the answer is (c).

6. From the given clues (third and fourth) we can clearly see that Ganesh and Daljeet have ` 20 each and Sandeep had ` 30. Also, since Jugraj has less than Alam, we get the following table:

Alam	Sandeep	Daljeet	Ganesh	Jugraj
40	30	20	20	10

Now, the first three statements are not possible and must be false because:

1. If Alam ended with 9.5, he must have spent 30.5. Given that he has spent ten times more than Ganesh, he must have spent 11 times what Ganesh Spent—which is an impossible decimal value.
 2. If Sandeep spends `29, then Daljeet must have spent `27.5 which is not possible.
 3. If Ganesh Spent `16, Alam would spend more than he had to start off with.
- Only Option (d) is possible.
7. From the figure it is clear that Paul would have 150, Gerard 50 and Hornis 40 patients Hence, option (a) is correct.



8. The following tabular structure would help you in getting the best possible route to solve this question. The initial table would look like this:

Position	City	Name	School
1			
2			
3	Pune		

The sequence of deductions is as follows:

- (i) Loyola not first, Pune third place and Pune not Loyola Æ Loyola second place.
- (ii) Bangalore not first Æ Bangalore Second.
- (iii) Convent School not in Hyderabad Æ Convent school in Pune and Hyderabad first place Æ Also gives us that Riaz and Little Flower both belong to Hyderabad and must come in

the first position row.

- (iv) Convent School not Balbir Æ Balbir from Bangalore and Loyola School and Bipin from Pune.

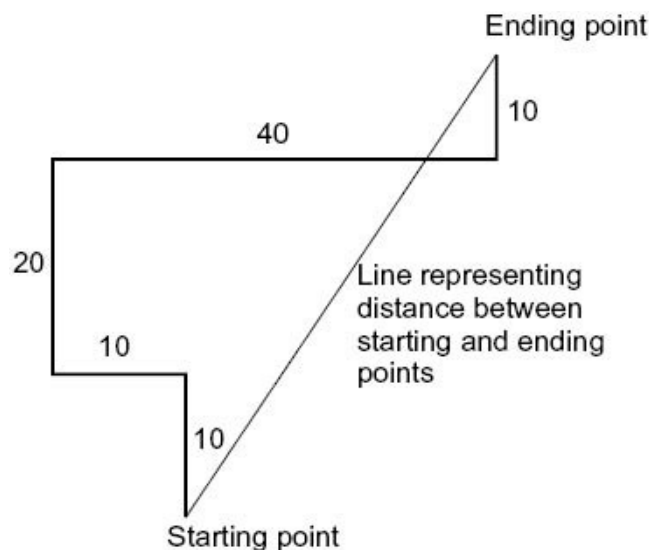
The final table after these deductions would look like:

Position	City	Name	School
1	Hyderabad	Riaz	Little flower
2	Bangalore	Balbir	Loyola School
3	Pune	Bipin	Convent School

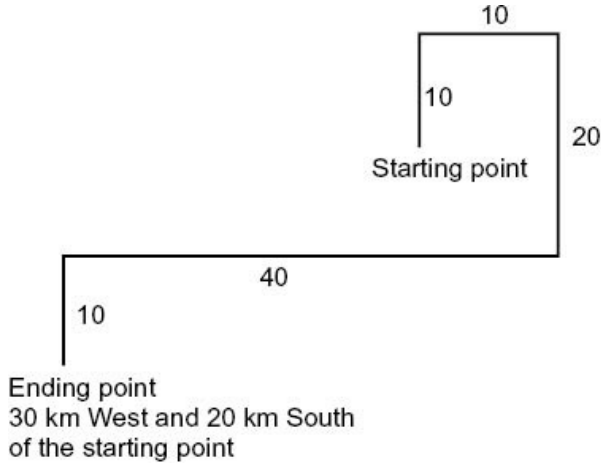
Option (c) is correct.

9. The only two pairs of single digit numbers that give their product as a perfect cube are the: $9 \ncong 3$ and $4 \ncong 2$. 9 and 3 are not in the options, so we start off our trials based on 2 and 4. Then according to the given situation, the father's age would be 24 and the mother's age would be half of $42 \ncong 21$. The difference between their ages would be 3 years as required by the problem. Thus, we see that the younger boy's age must be 2 years.
10. The following series of deductions would give us the answer:
- (a) Number of passengers waiting initially Æ 90% of $200 = 180$, with 72 women.
 - (b) Seating capacity of people in each flight = $\frac{2}{3}$ rd of $180 = 120$.
 - (c) After boarding flight A, number of people in the hall = 80 (as 60% of the seats are vacant) Æ Thus, 100 people must have boarded flight A out of which there must have been 50 women (as half the passengers who boarded flight A were women).
 - (d) Thus, there are 80 people waiting in the hall for flight B—thus the number of air hostesses in flight A = 4.
 - (e) Vacant Seats in Flight B = 40.
- Required ratio $40:4 = 10:1$. Option (a) is correct.

Solutions for Questions 11–14:

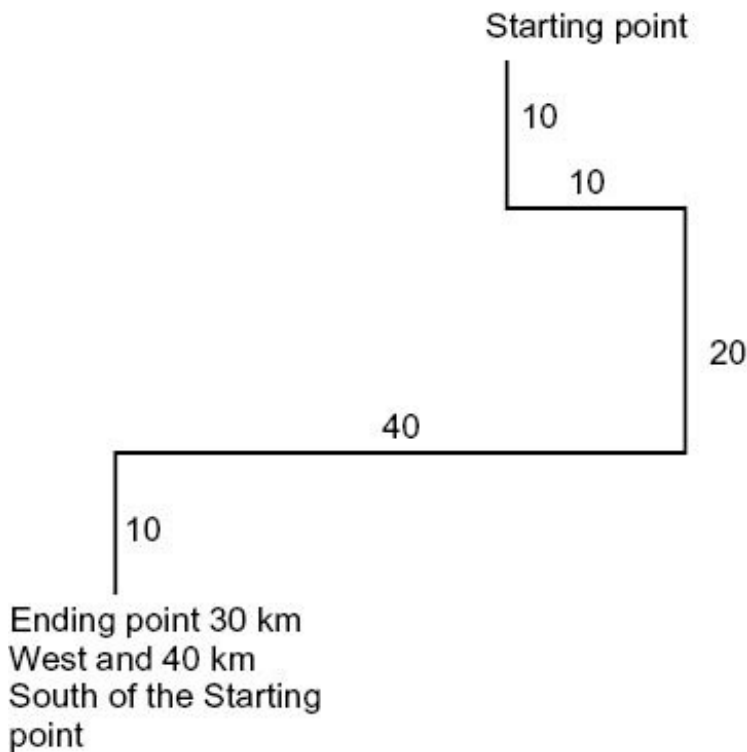


11. 90 kms
12. The end point makes a pythagoras triplet with the starting point, with two legs equal to 30 and 40. So the hypotenuse gives the required distance as 50 km and the direction is north east (as is evident from the figure).
- 13.



The revised figure would look as above and hence the answer would be 1 (30 west and 20 south).

14.



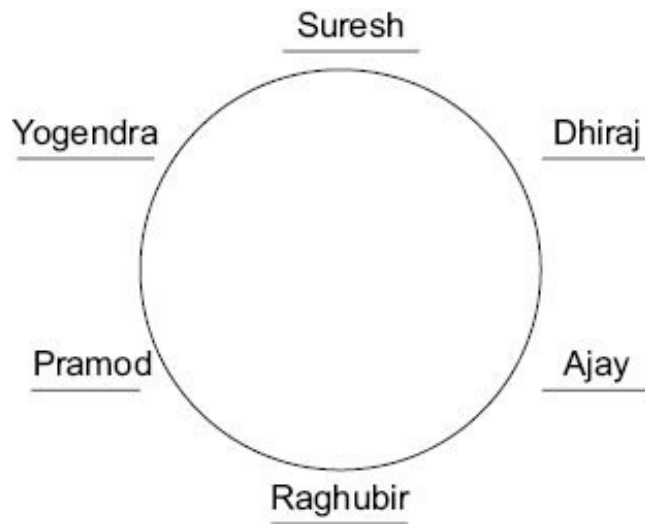
From the figure it is clear that he would be 40 south and 30 west.

Solutions for Questions 15 to 17:

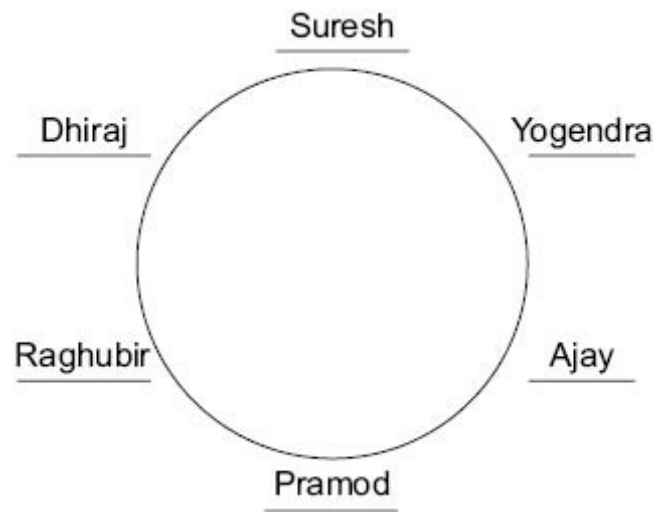
15. Of R6,R7,R8,R9 and R13 (the regions which produce medium quality of Crop 1 or 2), only R9 produces low quality Crop 3 or 4. Hence, there is only 1 region.
16. Some crop-3 producing regions like R1, R2 etc, produce Crop-1 too but not high quality crop-2.
17. All the three low quality crop-1 producing regions produce either high quality crop-4 or medium quality crop-3.

18. The following figures would make the answer clear:

Initial arrangement:



Final arrangement:



Hence, Suresh is sitting to the left of Dhiraj.

19. There can be many possibilities and this can be tested by drawing 4 lines on a plane and seeing how many areas are made—you can easily see that the number of distinct areas into which the plane is divided can differ and is not unique.
20. Solve this question using options. If you try option (c) i.e. 30 days, you would get that they did yoga for six mornings and played tennis for 16 evenings. Thus on 8 days they did neither yoga nor played tennis. Hence, option (c) is correct.
21. There are six 2's and four 4's in sequence. Thus, there would be 2 oranges in the basket.
22. $19 \pounds 1 - 4 \pounds 2 = 11$. Option (c) is correct.
23. It can be easily seen that the revenues at different values would be:
200 $\pounds$ 2, 220 $\pounds$ 1.9, 240 $\pounds$ 1.8, 260 $\pounds$ 1.7, 280 $\pounds$ 1.6, 300 $\pounds$ 1.5 and 320 $\pounds$ 1.4. The value goes up till 300 $\pounds$ 1.5 and then reduces. Hence, option (b) is correct.
24. The price per piece of bread would be 3 coins as the third traveller is paying 8 coins for his 2.66 loaves. Also the contribution of the first traveller is 2.33 loaves, while that of the second is only 0.33 loaves. Hence, the first traveller should get $2.33 \pounds 3 = 7$.

25. Since he is left with 1 diamond at the end, to the third watchman he must have reached with 6 diamonds, given him half (3) and two more (total 5) and be left with 1 diamond. With the same thought pattern you can solve the remaining part of the question.

The thought process would go as this:

1 Æ 6 Æ 16 Æ 36.

1. Three friends, returning from a movie, stopped to eat at a restaurant. After dinner, they paid their bill and noticed a bowl of mints at the front counter. Sita took $\frac{1}{3}$ rd of the mint, but returned four because she had a momentary pang of guilt. Fatima then took $\frac{1}{4}$ th of what was left but returned three for similar reasons. Eswari then took half of the remainder but threw two back into the bowl. The bowl had only 17 mints left when the raid was over. How many mints were originally in the bowl?
(a) 38 (b) 31
(c) 41 (d) None of these
2. Shyama and Vyom walk up an escalator (moving stairway). The escalator moves at a constant speed. Shyama takes three steps for every two of Vyom's steps. Shyama gets to the top of the escalator after having taken 25 steps, while Vyom (because her slower pace lets the escalator do a little more of the work) takes only 20 steps to reach the top. If the escalator were turned off, how many steps would they have to take to walk up?
(a) 40 (b) 50
(c) 60 (d) 80
3. Ashish is given ` 158 in one rupee denominations. He has been asked to allocate them into a number of bags such that any amount required between ` 1 and ` 158 can be given by handing out a certain number of bags without opening them. What is the minimum number of bags required?
(a) 11 (b) 12
(c) 13 (d) None of these
4. December 9, 2001 is Sunday. What was the day on December 9, 1971?
(a) Thursday (b) Wednesday
(c) Saturday (d) Sunday

Directions for Questions 5–11: Answer each of the questions independent of each other.

5. Four friends Ashok, Bashir, Chirag and Deepak are out shopping. Ashok has less money than three times the amount that Bashir has. Chirag has more money than Bashir. Deepak has an amount equal to the difference of amounts with Bashir and Chirag. Ashok has three times the money with Deepak. They each have to buy at least one shirt, or one shawl, or one sweater, or one jacket, that are priced ₹ 200, ₹ 400, ₹ 600 and ₹ 1000 a piece, respectively. Chirag borrows ₹ 300 from Ashok and buys a jacket. Bashir buys a sweater after borrowing ₹ 100 from Ashok and is left with no money. Ashok buys three shirts. What is the costliest item that Deepak could buy with his own money?
- (a) A Shirt (b) A Shawl
(c) A Sweater (d) A Jacket
6. In a family gathering there are two males who are grandfathers and four males who are fathers. In the same gathering there are two females who are grandmothers and four females who are mothers. There is at least one grandson or a granddaughter present in this gathering. There are two husband wife pairs in this group. These can either be a grandfather and a grandmother, or a father and a mother. The single grandfather (whose wife is not present) has two grandsons and a son present. The single grandmother (whose husband is not present) has two grand daughters and a daughter present. A grandfather or a grandmother present with their spouses does not have any grandson or granddaughter present. What is the minimum number of people present in this gathering?
- (a) 10 (b) 12
(c) 14 (d) 16
7. Eight people carrying food baskets are going for a picnic on motorcycles. Their names are A, B, C, D, E, F, G and H. They have four motorcycles M1, M2, M3 and M4 among them. They also have four food baskets O, P, Q and R of different size and shapes and each can be carried only on motorcycles M1, M2, M3 or M4 respectively. No more than two persons can travel on a motorcycle and no more than one basket can be carried on a motorcycle. There are two husband-wife pairs in this group of eight people and each pair will ride on a motorcycle together. C cannot travel with A or B. E cannot travel with B or F. G cannot travel with F, H or D. The husband-wife pairs must carry baskets O and P. Q is with A and P is with D. F travels on M1 and E travels on M2 motorcycles. G is with Q, and B cannot go with R. Who is travelling with H?
- (a) A (b) B
(c) C (d) D
8. I have a total of ₹ 1000. Item A costs ₹ 110, item B costs ₹ 90, item C costs ₹ 70, item D costs ₹ 40 and item E costs ₹ 45. For every item D that I purchase, I must also buy two of item B. For every item A, I must buy one of item C. For every item E, I must also buy two of item D and one of item B. For every item purchased I earn 1000 points and for every rupee not spent I earn a penalty of 1500 points. My objective is to maximise the points I can earn. What is the number of items that I must purchase to maximise my points?

(a) 13

(b) 14

(c) 15

(d) 16

9. On her walk through the park, Sheetal collected 50 coloured leaves, all either maple or oak. She sorted them by category when she got home, and found the following:

- (a) The number of red oak leaves with spots is even and positive.
- (b) The number of red oak leaves without any spot equals the number of red maple leaves without spots.
- (c) All non-red oak leaves have spots, and there are five times as many of them as there are red spotted oak leaves.
- (d) There are no spotted maple leaves that are not red.

5. There are exactly 6 red spotted maple leaves.

6. There are exactly 22 maple leaves that are neither spotted nor red.

How many oak leaves did she collect?

(a) 22

(b) 17

(c) 25

(d) 18

10. A King has unflinching loyalty from eight of his ministers M1 to M8, but he has to select only four to make a cabinet committee. He decides to choose these four such that each selected person shares a liking with at least one of the other three selected. The selected persons must also hate at least one of the likings of any of the other three persons selected.

M1 likes fishing and smoking, but hates gambling.

M2 likes smoking and drinking, but hates fishing.

M3 likes gambling, but hates smoking.

M4 likes mountaineering, but hates drinking.

M5 likes drinking, but hates smoking and mountaineering.

M6 likes fishing, but hates smoking and mountaineering.

M7 likes gambling and mountaineering, but hates fishing, and

M8 likes smoking and gambling, but hates mountaineering.

Who are the four people selected by the king?

(a) M1, M2, M5, M6

(b) M3, M4, M5, M6

(c) M4, M5, M6, M8

(d) M1, M2, M4, M7

11. In a 'keep-fit' gymnasium class there are fifteen females enrolled in a weight-loss program. They all have been grouped in any one of the five weight-groups W1, W2, W3, W4 or W5. One instructor is assigned to one weight-group only. Sonali, Shalini, Shubhra and Shahira belong to the same weight-group. Sonali and Rupa are in one weight-group, Rupali and Renuka are also in one weight-group. Rupa, Radha, Renuka, Ruchika and Ritu belong to

different weight-groups. Somya cannot be with Ritu, and Tara cannot be with Radha. Komal cannot be with Radha, Somya or Ritu. Shahira is in W1 and Somya is in W4 with Ruchika. Sweta and Jyotika cannot be with Rupali, but are in a weight-group with total membership of four. No weight-group can have more than five or less than one member. Amita, Babita, Chandrika, Deepika and Elina are instructors of weight-groups with membership sizes 5, 4, 3, 2 and 1, respectively. Who is the instructor of Radha?

(a) Babita	(b) Elina
(c) Chandrika	(d) Deepika

Directions for Questions 12–14: Answer the following questions based on the passage below.

A group of three or four has to be selected from seven persons. Among the seven are two women, Fiza and Kavita, and five men: Ram, Shyam, David, Peter and Rahim. Ram would not like to be in the group if Shyam is also selected. Shyam and Rahim want to be selected together in the group. Kavita would like to be in the group only if David is also there. David, if selected, would not like Peter in the group. Ram would like to be in the group only if Peter is also there. David insists that Fiza be selected in case he is there in the group.

12. Which of the following statements is true?
 - (a) Kavita and Ram can be part of a group of four.
 - (b) A group of four can have two women.
 - (c) A group of four can have all four men.
 - (d) None of the above
13. Which of the following is a feasible group of four?
 - (a) Ram, Peter, Fiza, Rahim
 - (b) Shyam, Rahim, Kavita, David
 - (c) Shyam, Rahim, Fiza, David
 - (d) Fiza, David, Ram, Peter
14. Which of the following is a feasible group of three?
 - (a) David, Ram, Rahim
 - (b) Peter, Shyam, Rahim
 - (c) Kavita, David, Shyam
 - (d) Fiza, David, Ram

Directions for Questions 15 and 16: Answer the following questions based on the information given below:

Elle is three times older than Yogesh, Zaheer is half the age of Wahida. Yogesh is older than Zaheer.

15. Which of the following information will be sufficient to estimate Elle's age?
 - (a) Zaheer is 10 years old.
 - (b) Both Yogesh and Wahida are older than Zaheer by the same number of years.
 - (c) Both (a) and (b) above
 - (d) None of the above.

16. Which of the following can be inferred?
- Yogesh is older than Wahida.
 - Elle is older than Wahida.
 - Elle may be younger than Wahida.
 - None of the above.

Directions for Questions 17–20: A and B are two sets (e.g., A = mothers, B = women). The elements that could belong to both sets (e.g., women who are mothers) is given by set $C = A.B$. The elements which could belong to either A or B, or both, is indicated by set $D = A \gg B$. A set that does not contain any elements is known as a null set, represented by @ (for example, if none of the women in set B is a mother, then $C = A.B$ is a null set, or $C = @$). Let 'V' signify the set of all vertebrates 'M' the set of all mammals; 'D' dogs; 'F' fish; 'A' Alsatian and 'P' a dog named Pluto.

17. If $P.A. = @$ and $P \gg A = D$, then which of the following is true?
- Pluto and Alsatis are dogs
 - Pluto is an Alsatian
 - Pluto is not a Alsatian
 - D is a null set.
18. If $y = F \gg (D.V)$ is not a null set, it implies that
- All fish are vertebrates
 - All dogs are vertebrates.
 - Some fish are dogs.
 - None of the above.
19. If $Z = (P.D) \gg M$, then
- The elements of Z consist of Pluto the dog or any other mammal.
 - Z implies any dog or mammal.
 - Z implies Pluto or any dog that is a mammal.
 - Z is a null set.
20. Given that $X = M.D$ is such that $X = D$, which of the following is true?
- All dogs are mammals.
 - Some dogs are mammals.
 - $X = @$
 - All mammals are dogs.

Directions for Question 21–24: Answer the questions independent of each other.

21. At a village mela, the following six nautankis (plays) are scheduled as shown in the table below.

No.	Nautanki	Duration	Showtimes
A.	<i>Sati Savitri</i>	1 hour	9.00 am and 2.00 p.m.
B.	<i>Joru ka Gulam</i>	1 hour	10.30 am and 11.30 a.m.

C.	<i>Sunder Kand</i>	30 minutes	10.00 a.m. and 11.00 a.m.
D.	<i>Veer Abhimanyu</i>	1 hour	10.00 a.m. and 11.00 a.m.
E.	<i>Reshma aur Shera</i>	1 hour	9.30 am, 12.00 noon and 2.00 p.m.
F.	<i>Jhansi ki Rani</i>	30 minutes	11.00 a.m. and 1.30 p.m.

You wish to see all the six nautankis. Further you wish to ensure that you get a lunch break from 12:30 p.m. to 1.30 p.m.

Which of the following ways can you do this?

- (a) *Sati Savitri* is viewed first; *Sunder Kand* is viewed third and *Jhansi Ki Rani* is viewed last
 - (b) *Sati Savitri* is viewed last; *Veer Abhimanyu* is viewed third and *Reshma aur Shera* is viewed first.
 - (c) *Sati Savitri* is viewed first; *Sunder Kand* is viewed third and *Joru ka Gulam* is viewed fourth
 - (d) *Veer Abhimanyu* is viewed third; *Reshma aur Shera* is viewed fourth and *Jhansi Ki Rani* is viewed fifth.
22. While Balbir had his back turned, a dog ran into his butcher shop, snatched a piece of meat off the counter and ran out. Balbir was mad when he realised what had happened. He asked three other shopkeepers, who had seen the dog, to describe it. The shopkeepers really didn't want to help Balbir. So each of them made a statement which contained one truth and one lie.
- A. Shopkeeper Number 1 said: "The dog had black hair and a long tail."
 - B. Shopkeeper Number 2 said: "The dog had a short tail and wore a collar."
 - C. Shopkeeper Number 3 said: "The dog had white hair and no collar."
- Based on the above statements, which of the following could be a correct description?
- (a) The dog had white hair, short tail and no collar.
 - (b) The dog had white hair, long tail and a collar.
 - (c) The dog had black hair, long tail and a collar.
 - (d) The dog had black hair, long tail and no collar.
23. The Bannerjees, the Sharmas and the Pattabharamans each have a tradition of eating Sunday lunch as a family. Each family serves a special meal at a certain time of day. Each family has a particular set of chinaware used only for this meal. Use the clues below to answer the following question.
- A. The Sharma family eats at noon.
 - B. The family that serves fried brinjal uses blue chinaware.
 - C. The Bannerjee family eats at 2 o'clock.
 - D. The family that serves sambhar does not use red chinaware.
 - E. The family that eats at 1 o'clock serves fried brinjal.
 - F. The Pattabhiraman family does not use white chinaware.
 - G. The family that eats last likes makki-ki-roti.

Which one of the following statements is true?

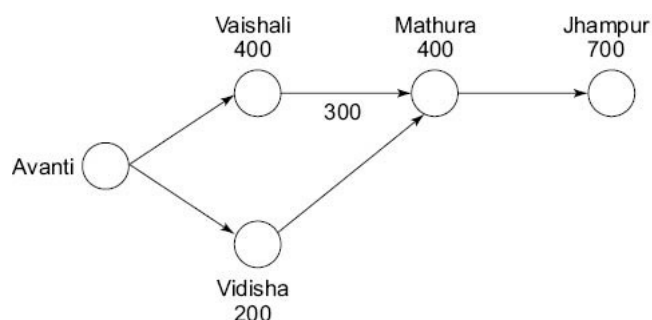
- (a) The Bannerjees eat makki-ki-roti at 2 o'clock, the Sharmas eat fried brinjal at 12 o'clock and the Pattabhiramans eat sambhar from red chinaware.
 - (b) The Sharmas eat sambhar served in white chinaware, the Pattabhiramans eat fried brinjal at 1 o'clock and the Bannerjees eat makki-ki-roti in blue chinaware.
 - (c) The Sharmas eat sambhar at noon, the Pattabhiramans eat fried brinjal served in blue chinaware and the Bannerjees eat makki-ki-roti served in red chinaware.
 - (d) The Bannerjees eat makki-ki-roti served in white chinaware, the Sharmas eat fried brinjal at 12 o'clock and the Pattabhiramans eat sambhar from red chinaware.
24. Mrs. Ranga has three children and has difficulty remembering their ages and the months of their birth. The clues below may help her remember.
- A. The boy, who was born in June, is 7 years old.
 - B. One of the children is 4 years old, but is not Anshuman.
 - C. Vaibhav is older than Supriya.
 - D. One of the children was born in September but it was not Vaibhav.
 - E. Supriya's birthday is in April.
 - F. The youngest child is only 2 years old.

Based on the above clues, which one of the following statements is true?

- (a) Vaibhav is the oldest, followed by Anshuman who was born in September, and the youngest is Supriya who was born in April.
- (b) Anshuman is the oldest being born in June, followed by Supriya who is 4 years old, and the youngest is Vaibhav who is 2 years old.
- (c) Vaibhav is the oldest being 7 years old, followed by Supriya who was born in April, and the youngest is Anshuman who was born in September.
- (d) Supriya is the oldest, who was born in April, followed by Vaibhav who was born in June, and Anshuman who was born in September.

Directions for Question 25–27: Answer these questions based on the pipeline diagram below.

The following sketch shows the pipelines carrying material from one location to another. Each location has a demand for material. The demand at Vaishali is 400, at Mathura is 400, at Jhampur is 700 and at Vidisha is 200. Each arrow indicates the direction of material flow through the pipeline. The flow from Vaishali to Mathura is 300. The quantity of material flow is such that the demands at all these locations are exactly met. The capacity of each pipeline is 1000.



25. What is the free capacity available in the Avanti-Vidisha Pipeline?
 (a) 300 (b) 200
 (c) 100 (d) 0
26. What is the free capacity available from Avanti to Vaishali?
 (a) 0 (b) 100
 (c) 200 (d) 300
27. The quantity moved from Avanti to Vidisha is
 (a) 200 (b) 800
 (c) 700 (d) 1000

Answer Key

1. (d)	2. (b)	3. (d)	4. (a)
5. (a)	6. (b)	7. (c)	8. (b)
9. (b)	10. (d)	11. (b)	12. (d)
13. (c)	14. (b)	15. (c)	16. (b)
17. (c)	18. (c)	19. (a)	20. (a)
21. (c)	22. (b)	23. (c)	24. (c)
25. (d)	26. (d)	27. (d)	

Solutions:

- Such questions have to be solved using reverse thinking. So start thinking about the last person, Eswari must have seen 30 mints (only in such a case would you get 17 mints left after taking half and then returning 2 to the bowl.) For Eswari to see 30 mints, it must be the case that after Fatima took $\frac{1}{4}$ th of what she saw, there must have been 27 mints left and when she put 3 back, Eswari would have seen 30 mints.
 Further, for Fatima to see 36 mints, Sita must have seen 48 chips to start with – as to leave 40 after taking $\frac{1}{4}$ th of the chips she sees and then giving back 4 the only starting point possible is 48.
- This question has to be seen from the perspective of the work done by the escalator. Since the ratio of speeds of walking of Shyama and Vyom is 3:2, when Shyama takes 25 steps, Vyom would take 16.66 steps. Let us say that the escalator would do x steps of work in this time. The value of x would be such that $25 + x$ would be equal to the number of steps. We also know that when Vyom walks up the escalator he does 20 steps. Hence, in the time Vyom does 20 steps, the escalator should do $1.2x$ steps. So $20 + 1.2x$ should also give us the same value for the number of steps. This means that the work done by the escalator should be 20% higher when Vyom reaches the top than the work that was done when Shyama reached the top. From

this point you can go in two ways:

- (i) By equating $25 + x = 20 + 1.2x \Rightarrow x = 25$. Hence, the escalator has 50 steps.
 - (ii) By going through options, we can easily see that if the escalator had 50 steps, then there would be a coverage of 25 steps for Shyama and 30 for Vyom—which represents the required increase of 20%.
3. In order to do this he should allocate an independent power of 2 in every bag. Thus, the first bag should contain 1, the second 2, the third 4, 8, 16, 32, 64. Using these he can form any value from 1 to 127. The last bag should contain the remaining 31 as we can add any combination of the above to 31 to get all values between 128 to 158.
 4. In a normal year for the same date the day of the week is advanced by 1, while for leap years the same is advanced by 2 days. Calculating backwards, we get $+30 + 8 = 38$. Gives $38/7 = +3$ giving us a Thursday.

Solutions for Questions 5–11:

5. From the given conditions we can make the following table:

Chirag (c)	700 (since he takes 300 from Ashok to buy a jacket)
Bashir (b)	500 (Since he has to borrow 100 from Ashok to buy a Shawl)
Deepak (d) = c – b	200
Ashok = 3d	600

It is clear from the numbers, that the costliest item Deepak can buy is a shirt.

6. The distribution of males and females that would give us the minimum number of people in the family would be as follows. **Note:** In the table M# represents a Male and F# represents a female.

					Explanation
Generation 1	M1 (single grandfather whose wife is not present)	M2-F1 (Couple)	F2 (Single grandmother whose husband is not present)		We have 2 grandfathers and 2 grandmothers out of which we are constrained to have at least 1 single grandfather and one single grandmother
Generation 2	M3-F3 (Couple)		F4	M4	There are a total of 4 fathers and 4 mothers which means that after the two grandfathers and 2 grandmothers there must be another two fathers and two mothers. Thus we have to introduce M3, M4 and F3 and F4.
Generation 3	M5, M6		F5, F6		The single grandmother has two granddaughters and the single grandfather has two grandsons- thus we need to introduce F5, F6 and M5, M6 respectively. Also note that the son of the single grandfather is M3 and the daughter of the single grandmother is F4

From the logic of the above table, we see that we can do the required conditional match by using 6 men and 6 women. Thus, we require a total of 12 people—the minimum number that can be present in the gathering.

7. The following table would get formed based on the deductions:

Starting table—based on the initial direct information, viz:

‘Four food baskets O, P, Q and R of different size and shapes and each can be carried only or motorcycles M1, M2, M3 or M4 respectively.’

‘Q is with A and P is with D.’

‘F travels on M1 and E travels on M2 motorcycles.’

‘G is with Q’.

Motorcyle	M1	M2	M3	M4
Basket	O	P	Q	R
Person 1	F	E	A	
Person 2		D	G	

Now at this point, if we use the fact that B cannot go with R, it means that B must be placed with Basket O on M1. Consequently, on M4 with basket R, C and H would travel together. Thus, option (c) is correct.

8. In order to solve this question, you need to understand that the requirement is to buy the maximum number of items. The least cost per item would occur if we buy 1E, 2D’s and 4B’s. In this case 7 items cost ` 485 and hence 14 would cost ` 970. Hence, option (b) is correct.

9. We can construct the following table based on the information given:

Species	Color	Spotted/ Non Spotted	Number
Oak	Red	Spotted	y (even and positive)
Oak	Red	Non-Spotted	x
Oak	Non-Red	Spotted	$5y$
Oak	Non-Red	Non-Spotted	0
Maple	Red	Spotted	6
Maple	Red	Non-Spotted	x
Maple	Non-Red	Spotted	0
Maple	Non-Red	Non-Spotted	22
		TOTAL	50

Solving we get: $6y + 2x = 22$. Since, y is even and positive it can only be 2 and x would then be 5. Hence the number of oak leaves would be $6y + x = 17$.

10. Solve this question through options.

Check option (a) through the following process: (**Note:** Since all likes and dislikes start with different letters we can just use the first letter to denote the likes and dislikes.

Minister	Likes	Dislikes

M1	F, S	G
M2	S, D	F
M5	D	S, M
M6	F	S, M

It can be observed that M1 does not hate any of the likings of the other three and hence this option is wrong.

For option (d) it can be seen that each of the 4 selected ministers likes one of the likes of at least one of the other three and the hate criteria is also fulfilled.

Minister	Likes	Dislikes
M1	F, S	G
M2	S, D	F
M4	M	D
M7	G, M	F

Hence, Option (d) is correct.

11. The conditions given can be summarised as follows:

Sonali, Shalini, Shubhra, Shahira, Rupa together.

Rupali, Renuka together.

In separate groups are:

Rupa,

Radha, (not with Tara) (not with Komal)

Renuka, Rupali

Ruchika,

Ritu (not with Sowmya)

Komal (not with Radha, Somya or Ritu)

Shweta, Jyotika, __, __ (not with Rupali and Renuka)

		Who cannot be there
W1 (5)	Sonali, Shalini, Shubhra, Shahira, Rupa	
Group of (4)	Shweta, Jyotika, _ , _	
Group of (3) or (2)	Rupali, Renuka	
W4 Group of (2) or (3)	Somya, Ruchika	Komal, Ritu
Group of (1)		

At this point it is clear that:

Ritu and Somya are separate and hence Komal must also be separate.

Also the three groups from the second to the fourth row in the table above must be of 2, 3 or 4 members.

This leaves us with only Tara, Komal, Radha, Ritu to place.

Thus, Radha and Ritu must be in group of 4 or 1 (since Renuka and Ruchika must be in the groups of 2 and 3 in some order and Rupa has already been placed in a group of 5.)

If you were to place Ritu in the group of 1, then Radha must go to the group of 4. In such a case, either Komal or Tara would have to be placed in Radha's group. This contravenes the basic conditions. Hence, Ritu cannot be alone and must be in the group of 4.

Consequently, Radha must belong to the group of 1—which means that she must be instructed by Elina.

Solutions for Questions 12–14:

First of all summarise the basic information as follows:

Women: Fiza, Kavita

Men: Ram, Shyam, David, Peter and Rahim.

Ram not Shyam.

Shyam + Rahim

Kavita only if David

David does not want Peter

Ram only if Peter

David only if Fiza.

After this go through each question through options meeting all the conditions:

12. Option (a) cannot be true since if Kavita and Ram are selected, David and Peter must also be selected and David wants Fiza as a part of his group. Thus we would not be able to create a group of 4.

Option (b): If Fiza and Kavita are selected, then David has to be part of the group. The fourth person has to be selected from amongst the four men left. However, Ram, Shyam and Rahim have to be selected with at least one more of the 4 males. Also since David is selected, Peter cannot be. Thus there is no way to select exactly 4 people in the group.

Option (c): This is also not possible as David wants Fiza so he cannot be selected amongst a selection of 4 males. This means that we must take all the other 4, but Ram does not want to be in a group with Shyam.

Hence, None of these is true.

13. Only the third group can be seen to be feasible.

14. Option (a) is rejected as it selects David without Fiza.

Option (c) is rejected for the same reason.

Option (d) is rejected as it selects Ram without Peter. Only Option (e) obeys all conditions.

Solutions for Questions 15 and 16:

- 15. If we know both 1 and 2 we can easily find that if Zaheer is 10, Yogesh and Wahida are 20 and hence Elle is 60.
- 16. Option (b) is the clear answer since Elle is three times older than Yogesh, who is elder than Zaheer. Also, Wahida is only double Zaheer’s age. Hence Option (b) is correct.

Solutions for Questions 17–20:

- 17. Since P.A is a null set, Pluto must not be an Alsation
- 18. F U (D.V) not being a null set means that some fish are dogs.
- 19. Since Z is the union of Pluto who is a dog and mammals, option (a) is correct.
- 20. Since $X = M.D$ and $X = D$ it must be the case that all dogs are mammals.

Solutions for Questions 21–24:

- 21. The correct order would be:
Sati Savitri (9 to 10), *Veer Abhimanyu* (10 to 11), *Sunder Kand* (11 to 11:30), *Joru Ka Ghulam* (11:30 to 12:30), *Jhansi Ki Rani* (1:30 to 2) and *Reshma and Shera* (2 to 3).
Option (c) matches with this order.
- 22. Create the following truth table we can get 2 cases:
Case 1: If we take the second statement of the first shopkeeper to be true we get case 1 as follows:

Shopkeeper Number	First Statement	Second Statement
1	F	T
2	F	T
3	T	F

This means that the dog had white hair, a long tail and wore a collar. Option (b) matches this as a possibility.

Note: This is just a possibility and not a definite truth—as there could be another case if we take the first statement of the first shopkeeper as true. However, we do not need to solve any further as the question is just asking us to identify a possibility. Hence, we do not need to make a table for case 2.

- 23. The following table can be prepared based on the information given:

Family	Time	Dish	Chinaware color
Sharma	12	Sambhar	White
Bannerjee	2	Makki Ki Roti	Red
Pattabhiramans	1	Fried Brinjal	Blue

Option (c) is correct.

24. From the information we can create the following starting table:

Age	Month	Name
7	June (boy)	Vaibhav/Ashuman
4	April/September	Supriya/Vaibhav
2	September/April	Supriya/Vaibhav/Anshuman

Also from the information about birth months it is clear that:

Since Supriya is in April and Vaibhav is not in September, he must be in June and Anshuman should be in September.

The table would evolve to:

Age	Month	Name
7	June (boy)	Vaibhav
4	April	Supriya
2	September	Anshuman

Option (c) can be seen to be correct.

Solutions for Questions 25 to 27:

Since 700 is required at Jhampur, the requirement at Mathura must be 1100, which has to be supplied from the two pipelines coming into Mathura.

It is clear that since Vaishali to Mathura is only 300, the Vidisha Mathura pipeline should carry 800. Hence, Avanti Vidisha should have 1000.

25. There is no free capacity in the Avanti Vidisha Pipeline

26. Avanti Vaishali flow should be 700 and hence the free capacity is 300.

27. 1000

Directions for Questions 1 and 2: There are five machines A, B, C, D and E situated on a straight line at distances of 10 metres, 20 metres, 30 metres, 40 metres and 50 metres respectively from the origin of the line. A robot is stationed at the origin of the line. The robot serves the machines with raw material whenever a machine becomes idle. All the raw material is located at the origin. The robot is in an idle state at the origin at the beginning of a day. As soon as one or more machines become idle, they send messages to the robot-station and the robot starts and serves all the machines from which it received messages. If a message is received at the station while the robot is away from it, the robot takes notice of message only when it returns to the station. While moving, it serves the machines in the sequence in which they are encountered, and then returns to the origin. If any messages are pending at the station when it returns, it repeats the process again. Otherwise, it remains idle at the origin till the next message(s) is (are) received.

1. Suppose on a certain day, machines A and D have sent the first two messages to the origin at the beginning of the first second, and C has sent a message at the beginning of the 5th second and B at the beginning of the 6th second, and E at the beginning of the 10th second. How much distance in metres has the robot travelled since the beginning of the day, when it notices the message of E? Assume that the speed of movement of the robot is 10 metres per second.
(a) 140 (b) 80
(c) 340 (d) 360
2. Suppose there is a second station with raw material for the robot at the other extreme of the line which is 60 metres from the origin, that is, 10 metres from E. After finishing the services in a trip, the robot returns to the nearest station. If both stations are equidistant, it chooses the origin as the station to return to. Assuming that both stations receive the messages sent by the machines and that all the other data remains the same, what would be the answer to the above question?
(a) 120 (b) 140
(c) 340 (d) 70

Directions for Questions 3 and 4: There are three bottles of water, A, B, C, whose capacities are 5 litres, 3 litres, and 2 litres respectively. For transferring water from one bottle to another and to drain out the bottles, there exists a piping system. The flow through these pipes is computer controlled. The computer that controls the flow through these pipes can be fed with three types of instructions, as explained below:

Instruction type	Explanation of the instruction
FILL (X,Y)	Fill bottle labelled X from the water in bottle labelled Y, where the remaining capacity of X is less than or equal to the amount of water in Y
EMPTY (X,Y)	Empty out the water in bottle labelled X into bottle labelled Y, where the amount of water in X is less than or equal to the remaining capacity of Y.
DRAIN (X)	Drain out all the water contained in bottle labelled X.

Initially, A is full with water, and B and C are empty.

- After executing a sequence of three instructions, bottle A contains one litre of water. The first and the third of these instructions are shown below:
 First instruction FILL (C, A)
 Third instruction FILL (C, A)
 (a) The second instruction is FILL (B, A).
 (b) The second instruction is EMPTY (C, B).
 (c) The second instruction transfers water from B to C.
 (d) The second instruction involves using the water in bottle A.
- Consider the same sequence of three instructions and the same initial state mentioned above. Three more instructions are added at the end of the above sequence to have A contain 4 litres of water. In this total sequence of six instructions, the fourth one is DRAIN (A). This is the only DRAIN instruction in the entire sequence. At the end of the execution of the above sequence, how much water (in litres) is contained in C?
 (a) One
 (b) Two
 (c) Zero
 (d) None of these.

Directions for Questions 5–9: Sixteen teams have been invited to participate in the ABC Gold Cup Cricket tournament. The tournament is conducted in two stages. In the first stage, the teams are divided into two groups. Each group consists of eight teams, with each team playing every other team in its group exactly once. At the end of the first stage, the top four teams from each group advance to the second stage while the rest are eliminated. The second stage comprises of several rounds. A round involves one match for each team. The winner of a match in a round advances to the next round, while the loser is eliminated. The team that remains undefeated in the second stage is declared the winner and claims the Gold Cup.

The tournament rules are such that each match results in a winner and a loser with no possibility of a tie. In the first stage a team earns one point for each win and no points for a loss. At the end of the first stage teams in each group are ranked on the basis of total points to determine the qualifiers advancing to the next stage. Ties are resolved by a series of complex tie-breaking rules so that exactly four teams from each group advance to the next stage.

5. What is the total number of matches played in the tournament?
(a) 28 (b) 55
(c) 63 (d) 35
6. The minimum number of wins needed for a team in the first stage to guarantee its advancement to the next stage is:
(a) 5 (b) 6
(c) 7 (d) 4
7. What is the highest number of wins for a team in the first stage in spite of which it would be eliminated at the end of first stage?
(a) 1 (b) 2
(c) 3 (d) 4
8. What is the number of rounds in the second stage of the tournament?
(a) 1 (b) 2
(c) 3 (d) 4
9. Which of the following statements is true?
(a) The winner will have more wins than any other team in the tournament.
(b) At the end of the first stage, no team eliminated from the tournament will have more wins than any of the teams qualifying for the second stage.
(c) It is possible that the winner will have the same number of wins in the entire tournament as a team eliminated at the end of the first stage.
(d) The number of teams with exactly one win in the second stage of the tournament is 4.
10. There is a vertical stack of books marked 1, 2, and 3 on Table-A, with 1 at the bottom and 3 on top. These are to be placed vertically on Table-B with 1 at the bottom and 2 on the top, by making a series of moves from one table to the other. During a move, the topmost book, or the topmost two books, or all the three, can be moved from one of the tables to the other. If there are any books on the other table, the stack being transferred should be placed on top of the existing books, without changing the order of books in the stack that is being moved in that move. If there are no books on the other table, the stack is simply placed on the other table without disturbing the order of books in it. What is the minimum number of moves in which the above task can be accomplished?
(a) One (b) Two

(c) Three

(d) Four

11. A shipping clerk has five boxes of different but unknown weights each weighing less than 100 kg. The clerk weighs the boxes in pairs. The weights obtained are 110, 112, 113, 114, 115, 116, 117, 118, 120 and 121 kgs. What is the weight, in kgs of the heaviest box?
- (a) 60 (b) 62
(c) 64 (d) cannot be determined
12. There are three cities A, B and C. Each of these cities is connected with the other two cities by at least one direct road. If a traveller wants to go from one city (origin) to another city (destination), she/he can do so either by traversing a road connecting the two cities directly, or by traversing two roads, the first connecting the origin to the third city and the second connecting the third city to the destination. In all there are 33 routes from A to B (including those via C). Similarly there are 23 routes from B to C (including those via A). How many roads are there from A to C directly?
- (a) 6 (b) 3
(c) 5 (d) 10

Directions for Questions 13–22: There are ten short passages given below. Read each of the passages and answer the question that follows it:

13. In a recent report the gross enrolment ratios at the primary level, that is the number of children enrolled in classes one to five as a proportion of all children aged 6 to 10, were shown to be very high for most states; in many cases they were way above 100 per cent! These figures are not worth anything since they are based on the official enrolment data compiled from school records. They might as well stand for gross exaggeration ratios.

Which one of the following options best supports the claim that the ratios are exaggerated?

- (a) The definition of gross enrolment ratio does not exclude, in its numerator, children below 6 years or above 10 years enrolled in classes one to five.
- (b) A school attendance study found that many children enrolled in the school records were not meeting a minimum attendance requirement of 80 per cent.
- (c) A study estimated that close to 22 per cent of children enrolled in the class one records were below 6 years of age and still to start going to school.
- (d) Demographic surveys show shifts in the population profile which indicates that the number of children in the age group of 6 to 10 years is declining.
14. Szymanski suggests that the problem of racism in football may be present even today. He begins by verifying an earlier hypothesis that clubs' wage bills explain 90% of their performance. Thus, if players' salaries were to be only based on their abilities, clubs that spend more should finish higher. If there is pay discrimination against some group of players—fewer teams bidding for black players thus lowering the salaries for blacks with the same ability as whites, that neat relation may no longer hold. He concludes that certain clubs seem to have achieved much less than what they could have, by not recruiting black players.

Which one of the following findings would best support Szymanski's conclusion?

- (a) Certain clubs took advantage of the situation by hiring above average shares of black players.
 - (b) Clubs hired white players at relatively high wages and did not show proportionately good performance.
 - (c) During the study period, clubs in towns with a history of discrimination against blacks, under-performed relative to their wage bills.
 - (d) Clubs in one region, which had higher proportions of black players, had significantly lower wage bills than their counterparts in another region which had predominantly white players.
15. The pressure on Italy's 257 jails has been increasing rapidly. These jails are old and overcrowded. They are supposed to hold up to 43,000 people—9000 fewer than now. San Vitter in Milan, which has 1,800 inmates, is designed for 800. The number of foreigners inside jails has also been increasing. The minister in charge of prisons fears that tensions may snap and so has recommended to the government an amnesty policy.
- Which one of the following would have most influenced the recommendation of the minister?
- (a) Opinion polls have indicated that many Italians favor a general pardon.
 - (b) The opposition may be persuaded to help since amnesties must be approved by a two thirds majority in parliament.
 - (c) During a recent visit to a large prison the Pope whose pronouncements are taken seriously appealed for 'a gesture of clemency'.
 - (d) Shortly before the recommendation was made 58 prisons reported disturbances in a period of two weeks.
16. The offer of the government to make iodised salt available at a low price of one rupee per kilo is welcome, especially since the government seems to be so concerned about the ill effects of non-iodised salt. But it is doubtful whether the offer will actually be implemented. Way back in 1994, the government, in an earlier effort, had prepared reports outlining three new and simple but experimental methods for reducing the costs of iodisation to about five paise per kilo. But these reports have remained just those-reports on paper.
- Which one of the following, if true, most weakens the author's contention that it is doubtful whether the offer will be actually implemented?
- (a) The government proposes to save on costs by using the three methods it has already devised for iodisation.
 - (b) The chain of fair-price distribution outlets now covers all the districts of the state.
 - (c) Many small-scale and joint-sector units have completed trials to use the three iodisation methods for regular production.
 - (d) The government which initiated the earlier effort is in place even today and has more information on the effects of non-iodised salt.
17. About 96% of Scandinavian moths have ears tuned to the ultrasonic pulses that bats, their predators, emit. But the remaining 4% do not have ears and are deaf. However, they have a larger wingspan than the hearing moths, and also have higher wing loadings—the ratio

between a wing's area and its weight—meaning higher maneuverability.

Which one of the following can be best inferred from the above passage?

- (a) A higher proportion of deaf moths than hearing moths fall prey to bats.
- (b) Deaf moths may try to avoid bats by frequent changes in their flight direction.
- (c) Deaf moths are faster than hearing moths, and so are less prone to becoming a bat's dinner than hearing moths.
- (d) The large wingspan enables deaf moths to better receive and sense the pulses of their bat predators.

18. Argentina's beef cattle herd has dropped to under 50 million from 57 million ten years ago in 1990. The animals are worth less, too: prices fell by over a third last year, before recovering slightly. Most local meat packers and processors are in financial trouble, and recent years have seen a string of plant closures. The Beef Producers' Association has now come up with a massive advertisement campaign calling upon Argentines to eat more beef—their 'juicy, healthy, rotund, plate-filling' steaks.

Which one of the following, if true, would contribute most to a failure of the campaign?

- (a) There has been a change in consumer preference towards eating leaner meats like chicken and fish.
 - (b) Prices of imported beef have been increasing, thus making locally grown beef more competitive in terms of pricing.
 - (c) The inability to crossbreed native cattle with improved varieties has not increased production to adequate levels.
 - (d) Animal rights pressure groups have come up rapidly, demanding better and humane treatment of farmyard animals like beef cattle.
19. The problem of traffic congestion in Athens has been testing the ingenuity of politicians and town planners for years. But the measures adopted to date have not succeeded in decreasing the number of cars on the road in the city centre. In 1980, an odd and even number-plate legislation was introduced, under which odd and even plates were banned in the city centre on alternate days, thereby expecting to halve the number of cars in the city centre. Then in 1993 it was decreed that all cars in use in the city centre must be fitted with catalytic converters; a regulation had just then been introduced, substantially reducing import taxes on cars with catalytic converters, the only condition being that the buyer of such a 'clean' car offered for destruction a car at least 15 years old.

Which one of the following options, if true, would best support the claim that the measures adopted to date have not succeeded?

- (a) In the 1980s, many families purchased second cars with the requisite odd or even number plate.
- (b) In the mid-1990s, many families found it feasible to become first-time car owners by buying a car more than 15 years old and turning it in for a new car with catalytic converters.
- (c) Post-1993, many families seized the opportunity to sell their more than 15 year-old cars

and buy 'clean' cars from the open market, even if it meant forgoing the import tax subsidy.

(d) All of the above.

20. Although in the limited sense of freedom regarding appointments and internal working, the independence of the Central Bank is unequivocally ensured, the same cannot be said of its right to pursue monetary policy without coordination with the central government. The role of the Central Bank has turned out to be subordinate and advisory in nature.

Which one of the following best supports the conclusion drawn in the passage?

- (a) A decision of the chairman of the Central Bank to increase the bank rate by two percentage points sent shock-waves in industry, academic and government circles alike.
 - (b) Government has repeatedly resorted to monetisation of the debt despite the reservation of the Central Bank.
 - (c) The Central Bank does not need the central government's nod for replacing soiled currency notes.
 - (d) The inability to remove coin shortage was a major shortcoming of this government.
21. The *Shveta-chattra* the 'White Umbrella' was a symbol of sovereign political authority placed over the monarch's head at the time of the coronation. The ruler so inaugurated was regarded not as a temporal autocrat but as the instrument of protective and sheltering firmament of supreme law. The white umbrella symbol is of great antiquity and its varied use illustrates the ultimate common basis of non-theocratic nature of states in the Indian tradition. As such, the umbrella is found, although not necessarily a white one, over the head of Lord Ram, the Mohammedan sultans and Chatrapati Shivaji.

Which one of the following best summarises the above passage?

- (a) The placing of an umbrella over the ruler's head was a common practice in the Indian subcontinent.
 - (b) The white umbrella represented the instrument of firmament of the supreme law and the non-theocratic nature of Indian states.
 - (c) The umbrella, not necessarily a white one, was a symbol of sovereign political authority.
 - (d) The varied use of the umbrella symbolised the common basis of the non-theocratic nature of states in the Indian tradition.
22. The theory of games is suggested to some extent by parlour games such as chess and bridge. Friedman illustrates two distinct features of these games. First, in a parlour game played for money, if one wins the other(others) loses(lose). Second, these games are games involving a strategy. In a game of chess, while choosing what action is to be taken, a player tries to guess how his /her opponent will react to the various actions he or she might take. In contrast, the card-pastime, 'patience' or 'solitaire' is played only against chance.

Which one of the following can best be described as a 'game'?

- (a) The team of Tenzing Norgay and Edmund Hillary climbing Mt. Everest for the first time in human history.
- (b) A national level essay writing competition.

- (c) A decisive war between the armed forces of India and Pakistan over Kashmir.
- (d) Oil Exporters' Union deciding on world oil prices, completely disregarding the countries which have at most minimal oil production.

Directions for questions 23–27: Read each of the five problems given below and choose the answer from among the four given choices.

23. Persons X, Y, Z and Q live in red, green, yellow or blue coloured houses placed in a sequence on a street. Z lives in a yellow house. The green house is adjacent to the blue house. X does not live adjacent to Z. The yellow house is in between the green and red houses. The colour of the house X lives in is
- (a) blue
(b) green
(c) red
(d) not possible to determine
24. My bag can carry no more than ten books. I must carry at least one book each of management, mathematics, physics and fiction. Also, for every management book I carry I must carry two or more fiction books, and for every mathematics book I carry I must carry two or more physics books. I earn 4, 3, 2 and 1 points for each management, mathematics, physics and fiction book, respectively, I carry in my bag. I want to maximise the points I can earn by carrying the most appropriate combination of books in my bag. The maximum points that I can earn are
- (a) 20
(b) 21
(c) 22
(d) 23
25. Five persons with names P, M, U, T and X live separately in any one of the following: A palace, a hut, a fort, a house or a hotel. Each one likes two different colours from among the following blue, black, red, yellow and green. U likes red and blue. T likes black. The person living in a palace does not like black or blue. P likes blue and red. M likes yellow. X lives in a hotel. M lives in a
- (a) hut
(b) palace
(c) fort
(d) house
26. There are ten animals—two each of lion, panther, bison, bear, and deer, in a zoo. The enclosures in the zoo are named X, Y, Z, P and Q and each enclosure is allotted to one of the following attendants Jack, Mohan, Shalini, Suman and Rita. Two animals of different species are housed in each enclosure. A lion and a deer cannot be together. A panther cannot be with either a deer or a bison. Suman attends to animals from among bison, deer, bear and panther only. Mohan attends to a lion and a panther. Jack does not attend to deer, lion or bison. X, Y and Z are allotted to Mohan, Jack and Rita respectively. X and Q enclosures have one animal of the same species. Z and P have the same pair of animals. The animals attended by Shalini are
- (a) bear & bison
(b) bison & deer

(c) bear & lion

(d) bear & panther

27. Eighty kilograms (kg) of store material is to be transported to a location 10 km away. Any number of couriers can be used to transport the material which can be packed in any number of units of 10, 20 or 40 kg. Courier charges are ` 10 per hour. Couriers travel at the speed of 10 km/hr if they are not carrying any load, at 5 km/hr if carrying 10 kg, at 2 km/hr if carrying 20 kg and at 1 km/hr if carrying 40 kg. A courier cannot carry more than 40 kg of load. The minimum cost at which 80 kg of store material can be transported will be

(a) ` 180

(b) ` 160

(c) ` 140

(d) ` 120

Directions for Questions 28–30: Each question is followed by two statements A and B. Answer each question using the following instructions.

Choose (a) if the question can be answered by using one of the statements alone but cannot be answered by using the other statement alone.

Choose (b) if the question can be answered by using either statement alone.

Choose (c) if the question can be answered by using both the statements together but cannot be answered by using either statement alone.

Choose (d) if the question cannot be answered even by using both the statements together

28. How many people are watching TV programme P?

A. Number of people watching TV programme Q is 1000 and number of people watching both the programmes P and Q is 100.

B. Number of people watching either P or Q or both is 1500.

29. Ghosh Babu has decided to take a non-stop flight from Mumbai to No Mans Land in south America. He is scheduled to leave Mumbai at 5 am Indian Standard Time on December 10, 2000. What is the local time at No Mans Land when he reaches there?

A. The average speed of the plane is 700 km/hr.

B. The flight distance is 10,500 km.

30. What are the ages of two individuals x & y ?

A. The age difference between them is 6 years.

B. The product of their ages is divisible by 6.

Answer Key

1. (a)	2. (a)	3. (b)	4. (c)
5. (c)	6. (b)	7. (a)	8. (c)
9. (c)	10. (d)	11. (b)	12. (a)
13. (c)	14. (b)	15. (d)	16. (c)
17. (b)	18. (a)	19. (d)	20. (b)

21. (d)	22. (c)	23. (a)	24. (c)
25. (b)	26. (c)	27. (b)	28. (c)
29. (d)	30. (d)		

Solutions:

Solutions for Questions 1 and 2:

Origin	A	B	C	D	E
Distance from origin	10	20	30	40	50

- The robot would begin its travels at the start of the first second when he starts from the origin. At this time it would have requests from A and D and would hence go to D and come back to the origin after meeting both these requests. A distance of 80 meters traveled in 8 seconds. When it reaches the origin it would see the message from C and B and move immediately to cater to these. By the time it comes back after catering to C, it would have travelled an additional 60 meters, and would see the message from E after travelling a total of 140 meters.
- The robot's travels would be A to D to second raw material station (as that would be closer) a distance of 60 meters covered by the end of the sixth second. It would see the messages from C and B when it reaches the second station and move towards C and then B and then go on to the origin. A total of 120 meters would be traversed before it sees the message from E.

Solutions for Questions 3 and 4:

The instructions are self explanatory here. Perhaps the only thing you need to notice is that the first two instruction types would work only if there is enough capacity in the receiving vessel.

- After the first FILL(C,A) instruction, the water situation would be:
A = 3, B = 0 and C = 2.
Since, the third instruction is again FILL(C,A) we first need to make space in C by emptying it. From the options, Option (b) fits the requirements.
- There is a total of 5 liters in the three vessels at the start. Drain A, would result in the draining off of 1 liter of water from this. This leaves 4 liters of water in the system. If after 6 instructions, A contains 4 liters (as mentioned in the question) it is obvious that neither B nor C can contain any water. Thus the amount of water in C would be 0. Option (c) is correct.

Solutions for Questions 5–9:

- The number of matches would be $8C_2$ (group 1) + $8C_2$ (group 2) + 4(quarter finals) + 2 (semi finals) + 1 (final) = 63
- Given that there are 8 teams in a group and a total of 28 matches. Since every match has a winner, it follows that there would be 28 wins and 28 losses in the group stage. Further 4 teams advance from every group—even if a team wins 5 matches it can still be eliminated, as it is possible that 5 teams win 5 matches each and a team winning 5 matches cannot be sure of advancement. However, if a team wins 6 of its matches in the first round, it is not possible

for more than 4 teams in the group to win 6 matches; and hence the team would be assured of advancement.

7. For this question we are looking for the highest number of wins for a team to get definitely eliminated in the tournament. It is possible for a team to advance even if it has only 2 wins. The scenario that would lead to this would be—7 wins for 1 team, 6 wins for 2nd team, 5 wins for third team and 2 wins each for each of the other 5 teams. In such a case, a team with even 2 wins can move to the second round. Thus, the highest number of wins for definite elimination is 1.
8. The quarter finals, the semi finals and finals would be the three rounds in the second stage of the tournament.
9. Option (a) can be eliminated, as it is not necessary that the winner would have more wins than all other teams in the tournament. For example, as seen above, a team with 2 wins in the group stage + 3 wins in the second stage of the tournament would have a total of 5 wins in the tournament (and would also be the winner of the tournament). On the other hand, a team with 7 wins in the first stage could be eliminated in the first round of the second stage and would not be the winner of the tournament.

Option (b) is also eliminated because it might be possible that in one group a team with just two wins qualifies (wins are distributed as 7, 6, 5, 2, 2, 2, 2, 2) while in the other group wins are distributed as 5, 5, 5, 5, 5, 1, 1, 1—and a team with 5 wins does not qualify.

Option (c) is correct in the scenario—a team with 2 wins in the group stage ends up winning the tournament (so a total of 5 wins for this team), while a team in the other group gets eliminated with 5 wins in the first stage.

Option (d) is also eliminated as the number of teams with exactly 1 win in the second stage would be the 2 losing semi finalists.

10. It would require four moves to get the desired result. First shift the entire stack from the first table to the second; then shift the top two books (2 and 3) from Table B to Table A. Next, Shift the top Book (Book 3) from Table A to Table B. The fourth and final move is to shift Book 2 from Table A to Table B. Thus the number of moves required would be 4.
11. For solving this question, we can take the weight of the heaviest box from the options. There are 3 options which we are given in this regard—64, 62 and 60. Since the highest weight total for any two boxes is given as 121 kgs, it is not possible for the heaviest box to be only 60 kgs in weight. Thus we can eliminate option (a).

Trying option 2 the following thought structure would follow:

Total 121 kgs—If the heaviest box is 62 kgs, the second heaviest would be 59.

Total 120 kgs— $62 + 58 = 120$ Æ one box of 58 kgs Æ 117 kgs total gets explained by $(59 + 58)$.

Total 118 kgs— $(62 + 56)$ Æ one box of 56 kgs Æ 115 kgs gets explained by $(59 + 56)$ and 114 kgs gets explained by the combination $(58 + 56)$

Total 116 kgs— $(62 + 54)$ Æ one box of 54 kgs Æ 113 kgs gets explained by $(59 + 54)$, 112 kgs gets explained by the combination $(58 + 54)$ and 110 kgs gets explained by the combination $(56 + 54)$.

Thus, 5 boxes of weights 62, 59, 58 56 and 54 kgs explains each of the 10 weight values which are given in the problem. Hence, the heaviest box is 62 kgs.

12. We need to go through the options and use the MNP rule tool relating to Permutations and Combinations.

If the first option is true, i.e., there are 6 routes between A to C:

We can draw up the following possibilities table for the number of routes between each of the three towns.

A–C	Possibilities for C–B	Possibilities for total routes A–C–B (Say X)	Possibilities for Total routes A–B (Y)
6	5, 4, 3, 2, 1	30, 24, 18, 12, 6	3, 9, 15, 21, 27
			Note: these values are derived based on the logic that $X + Y = 33$

We further know that there are 23 routes between B to C.

From the above combinations the possibilities for the routes between B to C are:

B–A (X in the table above)	A–C	B–A–C	B–C	Total
3	6	18	5	23
9	6	54 not possible	4	
15	6	90 not possible	3	
21	6	126 not possible	2	
27	6	162 not possible	1	

It is obvious that the first possibility in the table above satisfies all conditions of the given situation.

13. The question talks about exaggerated enrolment ratios—something that is clearly supported by both the first and the third option. Both these options talk about an exaggeration in the value of the numerator which naturally exaggerates the value of the ratio. However, Option (c) supports the argument better since it defines the quantum of this exaggeration (22%).
14. The conclusion Szymanski is getting to is that clubs achieved less due to not hiring black players. Obviously, clubs which invested only in the costlier white players and did not show proportionately good performance (as expected based on their investments) would be explained by the fact that relatively less costly (but equal ability wise) black players would be creating better performance for their clubs; and consequently if clubs which hired white players did not show proportionately good performance—that would tend to support the argument Szymanski is making.
15. It is very clear that we are looking for a reason which would have influenced the decision of the minister in charge of prisons and prompted him to recommend an amnesty policy to the

government. The paragraph clearly tells us that this decision has been made due to his fear that tensions may snap. Obviously, the fourth option is the best explanation for his fear and hence is the correct option.

None of the other options is in anyway related to the fear in the minister's mind of tensions snapping in the overcrowded jails of Italy.

16. The author is doubting the government's ability to implement the offer on the basis that they would not be able to implement their three new experimental methods. So any option which gives information to the contrary about the possible implementation of these methods by the government would be the best refutation of the author's contention.
17. The paragraph clearly states that the 4% of the moths who do not have ears and are hence deaf have higher maneuverability. Consequently, we can infer that these moths would try to avoid bats by frequent changes in flight direction—something that option (b) clearly states.
18. The advertisement campaign is based on enticing Argentine's by reminding them of the 'Juicy rotund plate filling' nature of the steaks. If there has been a change in consumer preferences towards eating leaner meats as stated in option (a), then obviously people would not be interested in buying 'juicy rotund plate filling' meats and this would lead the campaign to fail.
19. Each of the three options mentioned in the question is a way to circumvent the moves of the government to reduce traffic congestion. The first option will nullify any effect of the government's regulation of the mid 1990s. Also, the second and third options would nullify the benefits the town planners would expect to derive out of their 'clean cars' regulation of 1993. Thus, we should choose all of these as the correct option.
20. The monetisation of debt is the best example of the interference of the government in monetary policy; hence option (b) is the correct answer.
21. Option (b) looks close and is confusing. But a focused reading of the same shows that it is just using words from the paragraph and constructing a sentence, which does not really end up summarising the idea of the paragraph. The fourth option is a much better summary of the idea contained in the paragraph.
22. The definition of 'game' as defined in the paragraph has to be interpreted as one in which:
 - (a) There is a win-loss situation, and
 - (b) Players try to guess the reaction of the opponent to their actions.

Both these features would be present in a 'decisive' war between India and Pakistan. The other options do not have both these features.

23. There are two possible placements for the 4 houses as illustrated below:

Possibility 1	Red	Yellow	Green	Blue
		Z		X
Possibility 2	Blue	Green	Yellow	Red
	X		Z	

In both the cases, X can be seen to be living in the blue house. Thus we get a definite answer

for where X lives.

24. Use the following thought process to solve this question:

First the minimum requirements need to be met— Every subject should have at least 1 book.

	Management (4 points)	Mathematics (3 points)	Physics (2 points)	Fiction (1 point)	Total (Books/points)
First Step—Minimum requirements	1	1	2	2	6 books
Second Step		+1	+2		+3 books
Third Step			+1		+1 book
Total numbers of each category	1	2	5	2	10 books
Points earned	4	6	10	2	22 points

After the mandatory first step you should realise that you have a slack of 4 books to be put into the bag. We have two options: 1 management + 2 fiction books (6 points using 3 books)

OR 1 Mathematics + 2 Physics Books (7 points using 3 books)

Obviously, the use of 1 mathematics + 2 Physics books is a better point generator than 1 management and 2 fiction books. Thus, the second step in the table gets explained by this logic.

After this, we still have to put 1 more book. We need to ensure that we get maximum points added when we add the last book, at the same time we should not break any of the rules while doing so. It is obvious that we cannot add a management or a mathematics book by itself since it has other constraints attached to it. Thus, we should add a physics book as it gives 1 point more than a fiction book.

Thus the third step in the table above gets explained; and we have a total of 22 points.

25. The use of all the clues will yield the following table:

Person	P	M	U	T	X
Colors liked	Red and Blue	Yellow + _____	Red and Blue	Black + _____	_____ + _____
Stays At	Hut/Fort/House		Hut/Fort/House	Hut/Fort/House	Hotel

From the above table, it is clear that the hut, fort and house would be shared in any order between P, U and T. Thus, M must be living in a palace.

26. On putting the basic information in a tabular format we would reach the following position:

Enclosures	X	Y	Z	P	Q
Attendants	Mohan	Jack	Rita	Suman	Shalini
Animals	Lion, Panther	Bear, Panther	Deer, Bison	Deer, Bison	Lion,Bear

From the table, we can see that option (c) is correct.

Note: While solving this question, you have to keep track of the number of each animal since we are given that each animal is used exactly twice. That X and Q share 1 animal in common is a key point to be used in the solution. Since, the two panthers have already been used in X and Y—the only possible animal which can be common between X and Q is the Lion. Also, another key point is the information that the animal pairs in Z and P are the same. At this stage of the solution we just have deers and bisons which have 2 animals left. Panthers and Lions have been used fully, while 1 bear has also been used.

27. If we are to give the courier 10 kg packs, we need to send 8 such packs—a total transportation time of 16 hours @ 5kmph. One courier would require 2 hours to reach the destination.
If we are to use 20 kg packs, we need to send 4 such packs and each pack would require 5 hours (@ 2kmph). The total time required would be 20 hours.
Similarly, for 40 kg packs, 2 packs would require a total transportation time of 20 hours (since the courier would travel @ 1kmph). Each pack would require 10 hours.
Thus, the minimum courier cost is for 10 kg packs—16 hours $\times$ ₹ 10/hour = ₹ 160.
28. This is a conventional Venn diagram (set theory) problem. Only from statement 1 or only from statement 2 we cannot answer the question about how many people are watching P. But if we use both, we have all the information we need to solve this question.
29. We have no information, in either of the two statements about the time difference between Mumbai and No mans land. Thus, option (d) is correct.
30. There could be multiple answers satisfying the two conditions, thus we cannot find the ages of x and y based on the information provided. Option (d) is correct.

Directions for Questions 1–8: Read each of the eight short passages given below and answer the question that follows it.

1. Three airlines—IA, JA and SA, operate on the Delhi-Mumbai route. To increase the number of seats sold, SA reduced its fares and this was emulated by IA and JA immediately. The general belief was that the volume of air travel between Delhi and Mumbai would increase as a result.

Which of the following, if true, would add credence to the general belief?

- (a) Increase in profitability of the three airlines.
 - (b) Extension of the discount scheme to other routes.
 - (c) A study that shows that air travellers in India are price conscious.
 - (d) A study that shows that as much as 80% of air travels in India is company sponsored.
2. According to McNeill, a Brahmin priest was expected to be able to recite at least one of the Vedas. The practice was essential for several centuries when the Vedas had not yet been written down. It must have had a selective effect, since priests would have been recruited from those able or willing to memorise long passages. It must have helped in the dissemination of the work, since a memorised passage can be duplicated many times.

Which one of the following can be inferred from the above passage?

- (a) Reciting the Vedas was a Brahmin's obligation.
 - (b) The Vedic priest was like a recorded audio cassette.
 - (c) McNeill studied the behaviour of Brahmin priests.
 - (d) Vedic hymns had not been scripted.
3. Developed countries have made adequate provisions for social security for senior citizens. State insurers (as well as private ones) offer medicare and pension benefits to people who can no longer earn. In India, with the collapse of the joint family system, the traditional shelter of the elderly has disappeared. And a State faced with a financial crunch is not in a position to provide social security. So, it is advisable that the working population give serious thought to

building a financial base for itself.

Which one of the following, if it were to happen, weakens the conclusion drawn in the above passage the most?

- (a) The investible income of the working population, as a proportion of its total income, will grow in the future.
- (b) The insurance sector is underdeveloped and trends indicate that it will be extensively privatised in the future.
- (c) India is on a path of development that will take it to a developed country status, with all its positive and negative implications.
- (d) If the working population builds a stronger financial base, there will be a revival of the joint family system.

4. Various studies have shown that our forested and hilly regions and, in general, areas where biodiversity, as reflected in the variety of flora is high, are the places where poverty, appears to be high. And these same areas are also the ones where educational performance seems to be poor. Therefore, it may be surmised that, even disregarding poverty status, richness in biodiversity goes hand in hand with educational backwardness.

Which one of the following statements, if true, can be said to best provide supporting evidence for the surmise mentioned in the Passage?

- (a) In regions where there is little variety in flora, educational performance is seen to be as good as in regions with high variety in flora, when poverty levels are high.
- (b) Regions which show high biodiversity also exhibit poor educational performance, at low levels of poverty.
- (c) Regions which show high biodiversity reveal high levels of poverty and poor educational performance.
- (d) In regions where there is low biodiversity, at all levels of poverty, educational performance is seen to be good.

5. Cigarettes constitute a mere 20% of tobacco consumption in India, and fewer than 15% of the 200 million tobacco users consume cigarettes. Yet these 15% contribute nearly 90% of the tax revenues to the Exchequer from the tobacco sector. The punitive cigarette taxation regime has kept the tax base narrow and reducing taxes will expand this base.

Which one of the following best bolsters the conclusion that reducing duties will expand the tax base?

- (a) The cigarette manufacturers' association has decided to indulge in aggressive promotion.
- (b) There is a likelihood that tobacco consumers will shift to cigarette smoking, if cigarette prices were to reduce.
- (c) The cigarette manufacturers are lobbying for a reduction on duties.
- (d) An increase in duties on non-cigarette tobacco may lead to a shift in favour of cigarette smoking.

6. Thomas Malthus, the British clergyman turned economist, predicted that the planet would not be able to support the human population for long. His explanation was that human population

grows at a geometric rate, while the food supply grows only at an arithmetic rate.

Which one of the following, if true, would not undermine the thesis offered by Malthus?

- (a) Population growth can be slowed down by the voluntary choice of individuals and not just by natural disasters.
 - (b) The capacity of the planet to feed a growing human population can be enhanced through biotechnological means.
 - (c) Human systems, and natural systems like food supply, follow natural laws of growth which have remained constant, and will remain unchanged.
 - (d) Human beings can colonize other planetary systems on a regular and on-going basis to accommodate a growing population.
7. The company's coffee crop for 1998–99 totaled 8079 tons, an all time record. The increase over the previous year's production of 5830 tons was 38.58%. The previous highest crop was 6089 tons in 1970–71. The company had fixed a target of 8000 tons to be realised by the year 2000–01, and this has been achieved two years earlier, thanks to the emphasis laid on the key areas of irrigation, replacement of unproductive coffee bushes, intensive refilling and improved agricultural practices. It is now our endeavor to reach the target of 10000 tons in the year 2001–02.

Which one of the following would contribute most to making the target of 10000 tons in 2001–02 unrealistic?

- (a) The potential of the productivity enhancing measures implemented up to now has been exhausted.
 - (b) The total company land under coffee has remained constant since 1969 when an estate in the Nilgiri Hills was acquired.
 - (c) The sensitivity of the crop to climatic factors makes prediction about production uncertain.
 - (d) The target-setting procedures in the company have been proved to be sound by the achievement of the 8000 tonne target.
8. Animals in general are shrewd in proportion as they cultivate society. Elephants and beavers show the greatest signs of this sagacity when they are together in large numbers, but when man invades their communities they lose all their spirit of industry.

Among insects, the labours of the bee and the ant have attracted the attention and admiration of naturalists, but all their sagacity seems to be lost upon separation and a single bee or ant seems destitute of every degree of industry. It becomes the most stupid insect imaginable, and it languishes and soon dies.

Which of the following can be inferred from the above passage?

- (a) Humankind is responsible for the destruction of the natural habitat of animals and insects.
- (b) Animals, in general, are unable to function effectively outside their normal social environment.
- (c) Naturalists have great admiration for bees and ants, despite their lack of industry upon separation.

- (d) Elephants and beavers are smarter than bees and ants.

Directions for Questions 9 and 10: For each of the two questions indicate which of the statements given with that particular question is consistent with the description of the unreasonable man in the passage below.

Unreasonableness is a tendency to do socially permissible things at the wrong time. The unreasonable man is the sort of person who comes to confide in you when you are busy. He serenades his beloved when she is ill. He asks a man who has just lost money by paying a bill for a friend to pay a bill for him. He invites a friend to go for a ride just after the friend has finished a long car trip. He is eager to offer services which are not wanted but which cannot be politely refused. If he is present at arbitration, he stirs up dissension between the two parties, who were really anxious to agree. Such is the unreasonable man.

9. He tends to
- (a) entertain women.
 - (b) be a successful arbitrator when dissenting parties are anxious to agree.
 - (c) be helpful when solicited.
 - (d) tell a long story to people who have heard it many times before.
10. The unreasonable man tends to
- (a) bring a higher bidder to a salesman who has just closed a deal.
 - (b) disclose confidential information to others.
 - (c) sing the praises of the bride when he goes to a wedding.
 - (d) sleep late and rise early.
11. Three labelled boxes containing red and white cricket balls are all mislabelled. It is known that one of the boxes contains only white balls and one only red balls. The third contains a mixture of red and white balls. You are required to correctly label the boxes with the labels red, white and red and white by picking a sample of one ball from only one box. What is the label on the box you should sample?
- (a) White
 - (b) Red
 - (c) Red and White
 - (d) Not possible to determine from a sample of one ball
12. Abraham, Border, Charlie, Dennis and Elmer and their respective wives recently dined together and were seated at a circular table. The seats were so arranged that men and women alternated and each woman was three places distant from her husband. Mrs. Charlie sat to the left of Mr. Abraham. Mrs. Elmer sat two places to the right of Mrs. Border. Who sat to the right of Mr. Abraham?
- (a) Mrs. Dennis

- (b) Mrs. Elmer
- (c) Mrs. Border
- (d) Mrs. Border or Mrs. Dennis

Directions for Questions 13–15: These questions are based on the situation given below:

Ten coins are distributed among four people P, Q, R, S such that one of them gets one coin, another gets two coins, the third gets three coins and the fourth gets four coins. It is known that Q gets more coins than P and S gets fewer coins than R.

13. If the number of coins distributed to Q is twice the number distributed to P then which one of the following is necessarily true?
 - (a) R gets an even number of coins.
 - (b) R gets an odd number of coins.
 - (c) S gets an even number of coins.
 - (d) S gets an odd number of coins.
14. If R gets at least two more coins than S, then which one of the following is necessarily true?
 - (a) Q gets at least two more coins than S.
 - (b) Q gets more coins than P.
 - (c) P gets more coins than S.
 - (d) P and Q together get at least five coins.
15. If Q gets fewer coins than R, then which one of the following is not necessarily true?
 - (a) P and Q together get at least four coins.
 - (b) Q and S together get at least four coins.
 - (c) R and S together get at least five coins.
 - (d) P and R together get at least five coins.

Directions for Questions 16–18: These questions are based on the situation given below:

A young girl Roopa leaves home with x flowers, goes to the bank of a nearby river. On the bank of the river, there are four places of worship, standing in a row. She dips all the x flowers into the river. The number of flowers doubles. Then she enters the first place of worship, offers y flowers to the deity. She dips the remaining flowers into the river, and again the number of flowers doubles. She goes to the second place of worship, offers y flowers to the deity. She dips the remaining flowers into the river, and again the number of flowers doubles. She goes to the third place of worship, offers y flowers to the deity. She dips the remaining flowers into the river, and again the number of flowers doubles. She goes to the fourth place of worship, offers y flowers to the deity. Now she is left with no flower in hand.

16. If Roopa leaves home with 30 flowers, the number of flowers she offers to each deity is
 - (a) 30
 - (b) 31
 - (c) 32
 - (d) 33
17. The minimum number of flowers that could be offered to each deity is

- (a) 0 (b) 15
(c) 16 (d) Cannot be determined

18. The minimum number of flowers with which Roopa leaves home is

- (a) 16 (b) 15
(c) 0 (d) Cannot be determined

Directions for Questions 19–20: The following table presents the sweetness of different forms relative to sucrose, whose sweetness is taken to be 1.00.

Lactose	0.16
Maltose	0.32
Glucose	0.74
Sucrose	1.00
Fructose	1.70
Saccharin	675.00

19. What is the minimum amount of sucrose (to the nearest gram) that must be added to one-gram of saccharin to make a mixture that will be less than 100 times as sweet as glucose?

- (a) 7 (b) 8
(c) 9 (d) 100

20. Approximately how many times sweeter than sucrose is a mixture consisting of glucose, sucrose and fructose in the ratio of 1: 2: 3?

- (a) 1.3 (b) 1
(c) 0.6 (d) 2.3

Directions for Questions 21 and 22: These questions are based on the situation given below:

A, B, C, D, E and F are a group of friends from a club. There are two housewives, one lecturer, one architect, one accountant and one lawyer in the group. There are two married couples in the group. The lawyer is married to D who is a housewife. No lady in the group is either an architect or an accountant. C, the accountant, is married to F who is a lecturer. A is married to D and E is not a housewife.

21. What is E?

- (a) Lawyer (b) Architect
(c) Lecturer (d) Accountant

22. How many members of the group are male?

- (a) 2 (b) 3
(c) 4 (d) None of the above

Directions for Questions 23 and 24: These questions are based on the situation given below.

Seven players who represented a university are to be felicitated in a function. They are A, B, C, D, E, F and G. They are to be seated on the dais along one side of a rectangular table. Some of the conditions are

- I. A & G are to be seated at the extreme right which is closest to the exit because they have to leave early.
 - II. B is to be seated at the centre as he will be given the man of the match award.
 - III. C and D to be seated as far as possible because they are both wicketkeepers.
23. Which of the following may not be seated at either end of the table?
- (a) C
 - (b) D
 - (c) G
 - (d) F
24. Which of the following pairs may not be seated together?
- (a) E & A
 - (b) B & D
 - (c) B & F
 - (d) G & D

Directions for Questions 25–27: These questions are based on the situation given below.

There are fifty integers $a_1, a_2, \dots, a_{50}$, not all of them necessarily different. Let the greatest integer of these fifty integers be referred to as G and smallest integer be referred to as L . The integers a_1 , through a_{24} form sequence S_1 , and the rest form sequence S_2 . Each member of S_1 is less than or equal to each member of S_2 .

25. All values in S_1 are changed in sign, while those in S_2 remain unchanged. Which of the following statements is true?
- (a) Every member of S_1 is greater than or equal to every member of S_2 .
 - (b) G is in S_1
 - (c) If all numbers originally in S_1 and S_2 had the same sign, then after the change of sign, the largest number of S_1 and S_2 is in S_1 .
 - (d) None of the above.
26. Elements of S_1 are in ascending order, and those of S_2 are in descending order, a_{24} and a_{25} are interchanged. Then which of the following statements is true?
- (a) S_1 continues to be in ascending order.
 - (b) S_2 continues to be in descending order.
 - (c) S_1 continues to be in ascending order and S_2 in descending order.
 - (d) None of these.
27. Every element of S_1 is made greater than or equal to every element of S_2 by adding to each element of S_1 an integer x . Then x cannot be less than
- (a) 210

- (b) The smallest value of S_2
- (c) The largest value of S_2
- (d) $(G - L)$

Directions for Questions 28 and 29: These questions are based on the situation given below.

A robot moves on a graph sheet with x and y -axes. The robot is moved by feeding it with a sequence of instructions. The different instructions that can be used in moving it, and their meaning are

Instruction	Meaning
GOTO (x, y)	Move to point with coordinates (x, y) no matter where you are currently
WALK X (p)	Move parallel to the x -axis through a distance of p , in the positive direction if p is positive, and in the negative direction if p is negative
WALK Y (p)	Move parallel to the y -axis through a distance of p , in the positive direction if p is positive, and in the negative direction if p is negative

28. The robot reaches point $(6, 6)$ when a sequence of three instructions is executed, the first of which is a GOTO (x, y) instruction, the second is WALK X (2) and the third is WALK Y (4) . What are the values of x and y ?
- (a) 2, 4
 - (b) 0, 0
 - (c) 4, 2
 - (d) 2, 2
29. The robot is initially at (x, y) , $x > 0$ and $y < 0$. The minimum number of instructions needed to be executed to bring it to the origin $(0, 0)$ if you are prohibited from using the GOTO instruction is:
- (a) 2
 - (b) 1
 - (c) $x + y$
 - (d) 0

Directions for Questions 30–32: These questions are based on the situation given below:

Recently, Ghosh Babu spent his winter vacation on Kyakya Island. During the vacation, he visited the local casino where he came across a new card game. Two players, using a normal deck of 52 playing cards, play this game. One player is called the Dealer and the other is called the Player. First, the player picks a card at random from the deck. This is called the base card. The amount in rupees equal to the face value of the base card is called the base amount. The face values of Ace, King, Queen and Jack are ten. For other cards, the face value is the number on the card. Once, the Player picks a card from the deck, the Dealer pays him the base amount.

Then the dealer picks a card from the deck and this card is called the top card. If the top card is of the same suit as the base card, the Player pays twice the base amount to the Dealer. If the top card is of the same colour as the base card (but not the same suit) then the Player pays the base amount to the Dealer. If the top card happens to be of a different colour than the base card, the Dealer pays the base amount to the Player. Ghosh Babu played the game 4 times. First time he picked eight of clubs and the Dealer picked queen of clubs. Second time, he picked ten of hearts and the dealer picked two of

spades. Next time, Ghosh Babu picked six of diamonds and the dealer picked ace of hearts. Lastly, he picked eight of spades and the dealer picked jack of spades. Answer the following questions based on these four games.

30. If Ghosh Babu stopped playing the game when his gain would have been maximum, the gain in ` would have been
- (a) 12 (b) 20
(c) 16 (d) 4
31. The initial money Ghosh Babu had (before the beginning of the game sessions) was ` X. At no point did he have to borrow any money. What is the minimum possible value of X?
- (a) 16 (b) 8
(c) 100 (d) 24
32. If the amount of money that Ghosh Babu had with him at the end was ` 100, what was the initial amount he had with him?
- (a) 120 (b) 8
(c) 4 (d) 96

Directions for Questions 33–42: Each question consists of five statements followed by options consisting of three statements put together in a specific order. Choose the option which indicates a valid argument, that is, where the third statement is a conclusion drawn from the preceding two statements.

Example:

- A. All cigarettes are hazardous to health.
B. Brand X is a cigarette.
C. Brand X is hazardous to health.

ABC is a valid option, where statement C can be concluded from statements A and B.

33. A. All software companies employ knowledge workers.
B. Tara Tech employs knowledge workers.
C. Tara Tech is a software company.
D. Some software companies employ knowledge workers.
E. Tara Tech employs only knowledge workers.
- (a) ABC (b) ACB
(c) CDB (d) ACE
34. A. Traffic congestion increases carbon monoxide in the environment.
B. Increase in carbon monoxide is hazardous to health.
C. Traffic congestion is hazardous to health.
D. Some traffic congestion does not cause increased carbon monoxide.

- E. Some traffic congestion is not hazardous to health.
(a) CBA (b) BDE
(c) CDE (d) BAC
35. A. Apples are not sweets.
B. Some apples are sweet.
C. All sweets are tasty.
D. Some apples are not tasty.
E. No apple is tasty.
(a) CEA (b) BDC
(c) CBD (d) EAC
36. A. Some towns in India are polluted.
B. All polluted towns should be destroyed.
C. Town Meghana should be destroyed.
D. Town Meghana is polluted.
E. Some towns in India should be destroyed.
(a) BDE (b) BDC
(c) ADE (d) CDB
37. A. No patriot is a criminal.
B. Bundledas is not a criminal.
C. Bundledas is a patriot.
D. Bogusdas is not a patriot.
E. Bogusdas is a criminal.
(a) ACB (b) ADC
(c) ADE (d) ABE
38. A. Anteaters like ants.
B. Boys are anteaters.
C. Balaram is an anteater.
D. Balaram likes ants.
E. Balaram may eat ants.
(a) DCA (b) ADC
(c) ABE (d) ACD
39. A. All actors are handsome.

- B. Some actors are popular.
- C. Ram is handsome.
- D. Ram is a popular actor.
- E. Some popular people are handsome.

(a) ACD

(b) ABE

(c) DCA

(d) EDC

40. A. Modern industry is technology driven.

B. BTI is a modern industry.

C. BTI is technology driven.

D. BTI may be technology driven.

E. Technology driven industry is modern.

(a) ECB

(b) EBC

(c) BCE

(d) DEB

41. A. All Golmal islanders are blue coloured people.

B. Some smart people are not blue coloured people.

C. Some blue coloured people.

D. Some smart people are Golmal islanders.

E. Some smart people are not Golmal islanders.

(a) ADE

(b) DAB

(c) AED

(d) ABE

42. A. MBAs are in great demand.

B. Ram and Sita are in great demand.

C. Ram is in great demand.

D. Sita is in great demand.

E. Ram and Sita are MBAs.

(a) ABE

(b) ECD

(c) AEB

(d) EBA

Directions for Questions 43–46: Each question has a main statement followed by four statements labelled, A, B, C and D. Choose the ordered pair of statements where the first statement implies the second, and the two statements are logically consistent with the main statement.

43. Either the orangutan is not angry, or he frowns upon the world.

A. The orangutan frowns upon the world.

B. The orangutan is not angry.

- C. The orangutan does not frown upon the world.
 D. The orangutan is angry.
 (a) CB only (b) DA only
 (c) AB only (d) CB and DA
44. Either Ravana is a demon, or he is a hero.
 A. Ravana is a hero.
 B. Ravana is a demon.
 C. Ravana is not a demon.
 D. Ravana is not a hero.
 (a) CD only (b) BA only
 (c) CD and BA (d) DB and CA
45. Whenever Rajeev uses the internet, he dreams about spiders.
 A. Rajeev did not dream about spiders.
 B. Rajeev used the internet.
 C. Rajeev dreamt about spiders.
 D. Rajeev did not use the internet.
 (a) AD (b) DC
 (c) CB (d) DA
46. If I talk to my professors, then I do not need to take a pill for headache.
 A. I talked to my professors.
 B. I did not need to take a pill for headache.
 C. I needed to take a pill for headache.
 D. I did not talk to my professors.
 (a) AB only (b) DC only
 (c) CD only (d) AB and CD

Directions for Questions 47–56: Each question has a set of four statements. Each statement has three segments. Choose the alternative where the third segment in the statement can be logically deduced using both the preceding two, but not just from one of them.

47. A. No cowboys laugh. Some who laugh are sphinxes. Some sphinxes are not cowboys.
 B. All ghosts are fluorescent. Some ghosts do not sing. Some singers are not fluorescent.
 C. Cricketers indulge in swearing. Those who swear are hanged. Some who are hanged are not cricketers.
 D. Some crazy people are paints. All crazy people are whistlers. Some whistlers are

paints.

(a) A and B

(b) C only

(c) A and D

(d) D only

48. A. All good people are knights. All warriors are good people. All knights are warriors.
B. No footballers are ministers. All footballers are tough. Some ministers are players.
C. All pizzas are snacks. Some meals are pizzas. Some meals are snacks.
D. Some barkers are musk-deer. All barkers are sloth bears. Some sloth bears are musk-deer.
(a) C and D (b) B and C
(c) A only (d) C only
49. A. Dinosaurs are prehistoric creatures. Water-buffaloes are not dinosaurs. Water-buffaloes are not pre-historic creatures.
B. All politicians are frank. No frank people are crocodiles. No crocodiles are politicians.
C. No diamond is quartz. No opal is quartz. Diamonds are opals.
D. All monkeys like bananas. Some GI Jose like bananas. Some GI Jose are monkeys.
(a) C only (b) B only
(c) A and D (d) B and C
50. A. All earthquakes cause havoc. Some landslides cause havoc. Some earthquakes cause landslides.
B. All glass things are transparent. Some curios are glass things. Some curios are transparent.
C. All clay objects are brittle. All XY are clay objects. Some XY are brittle.
D. No criminal is a patriot. Ram is a criminal. Ram is a patriot.
(a) D only (b) B only
(c) C and B (d) A only
51. A. MD is an actor. Some actors are pretty. MD is pretty.
B. Some men are cops. Some men are brave. Some brave people are cops.
C. All cops are brave. Some men are cops. Some men are brave.
D. All actors are pretty; MD is not an actor; MD is not pretty.
(a) D only (b) C only
(c) A only (d) B and C
52. A. All IIMs are in India. No BIMs are in India. No IIMs are BIMs.
B. All IIMs are in India. No BIMs are in India. No BIMs are IIMs.

- C. Some IIMs are not in India. Some BIMs are not in India. Some IIMs are BIMs.
 D. Some IIMs are not in India. Some BIMs are not in India. Some BIMs are IIMs.
 (a) A and B (b) C and D
 (c) A only (d) B only
53. A. Citizens of Yes Islands speak only the truth. Citizens of Yes Islands are young people. Young people speak only the truth.
 B. Citizens of Yes Islands speak only the truth. Some Yes Islands are in the Atlantic. Some citizens of Yes Islands are in the Atlantic.
 C. Citizens of Yes Islands speak only the truth. Some young people are citizens of Yes Islands. Some young people speak only the truth.
 D. Some people speak only the truth. Some citizens of Yes Islands speak only the truth. Some people who speak only the truth are citizens of Yes Islands.
 (a) A only (b) B only
 (c) C only (d) D only
54. A. All mammals are viviparous. Some fish are viviparous. Some fish are mammals.
 B. All birds are oviparous. Some fish are not oviparous. Some fish are birds.
 C. No mammal is oviparous. Some creatures are oviparous and some are not. Some creatures are not mammals.
 D. Some creatures are mammals. Some creatures are viviparous. Some mammals are viviparous.
 (a) A only (b) B only
 (c) C only (d) D only
55. A. Many singers are not writers. All poets are singers. Some poets are not writers.
 B. Giants climb beanstalks. Some chicken do not climb beanstalks. Some chicken are not giants.
 C. All explorers live in snowdrifts. Some penguins live in snowdrifts. Some penguins are explorers.
 D. Amar is taller than Akbar. Anthony is shorter than Amar. Akbar is shorter than Anthony.
 (a) A only (b) B only
 (c) B and C (d) D only
56. A. A few farmers are rocket scientists. Some rocket scientists catch snakes. A few farmers catch snakes.
 B. Poonam is a kangaroo. Some kangaroos are made of teak. Poonam is made of teak.

- C. No bulls eat grass. All matadors eat grass. No matadors are bulls.
- D. Some skunks drive Cadillacs. All skunks are polar bears. Some bears drive Cadillacs.
- (a) B only (b) A and C
- (c) C only (d) C and D

Directions for Questions 57–59: Each question is followed by two statements A and B. Answer each question using the following instructions.

Choose (a) if the question can be answered by using one of the statements alone, but cannot be answered using the other statement alone.

Choose (b) if the question can be answered by using either statement alone.

Choose (c) if the question can be answered by using both statements together, but cannot be answered using either statement alone.

Choose (d) if the question cannot be answered even by using both statements together.

57. Three professors A, B and C are separately given three sets of numbers to add. They were expected to find the answers to $1 + 1$, $1 + 1 + 2$, and $1 + 1$ respectively. Their respective answers were 3, 3 and 2. How many of the professors are mathematicians?
- (a) A mathematician can never add two numbers correctly, but can always add three numbers correctly.
- (b) When a mathematician makes a mistake in a sum, the error is $+1$ or -1 .
58. How many among the four students A, B, C and D have passed the exam?
- (a) The following is a true statement: A and B passed the exam.
- (b) The following is a false statement: at least one among C and D has passed the exam.
59. Mr. Mendel grew one hundred flowering plants from black seeds and white seeds, each seed giving rise to one plant. A plant gives flowers of only one colour. From a black seed comes a plant giving red or blue flowers. From a white seed comes a plant giving red or white flowers. How many black seeds were used by Mr. Mendel?
- (a) The number of plants with white flowers was 10.
- (b) The number of plants with red flowers was 70.

Answer Key

1. (c)	2. (b)	3. (c)	4. (d)
5. (b)	6. (c)	7. (a)	8. (b)
9. (d)	10. (a)	11. (c)	12. (d)
13. (d)	14. (b)	15. (a)	16. (c)
17. (c)	18. (b)	19. (c)	20. (a)
21. (b)	22. (b)	23. (d)	24. (a)

25. (d)	26. (a)	27. (d)	28. (c)
29. (a)	30. (a)	31. (b)	32. (d)
33. (b)	34. (d)	35. (a)	36. (b)
37. (a)	38. (d)	39. (b)	40. (a)
41. (d)	42. (c)	43. (d)	44. (d)
45. (a)	46. (d)	47. (c)	48. (a)
49. (b)	50. (c)	51. (b)	52. (a)
53. (c)	54. (c)	55. (b)	56. (d)
57. (d)	58. (c)	59. (d)	

Solutions:

1. The question is about adding credence, and is to be interpreted as adding a support to the argument or assumption. In this case, the price consciousness is the most important factor which will contribute to an increase in the number of travellers in case of a price drop.
2. In a question which asks about something to be inferred, it has to be answered by what is implicit and not explicit. Here the options (a), (c), (d) had been mentioned in the question, leaving out option (b) to be the implicit answer.
3. The conclusion was drawn on the basis of the country not being able to reach the level of a developed country. If that argument gets countered then it will weaken the argument and the conclusion, so the right answer is being provided by option (c).
4. The argument very clearly disregarded the poverty aspect and focussed on the educational and bio-diversity connection so option (d) is the only one which provides a link without the poverty aspect.
5. This question shows that there is a clear indication that inspite of high duties and the high price of cigarettes, the government earns a lot through the taxes levied by the sale of cigarettes. If the duties were reduced it would lead to a drop in the cigarette prices which might lead to more sales, subsequently increasing the government earnings. Thus option (b) is the correct answer.
6. All the options except the 3rd one focus on how the race can survive. Only option (c) gives a basis for the theory and thus does not undermine it.
7. The boost in the production was the result of some measures that were taken. If we have to make further production, these measures have to be extended or improved, but if they have exhausted their potential, then further thrust in growth is not possible and is clearly mentioned in option (a).
8. The statement clearly shows the fact that the animals and insects are not able to function normally when their natural environment or habitat is disturbed and is clearly mentioned in option (b).
9. Here the option which shows unreasonable behaviour is option (d), showing a contradictory situation.

10. Option (a) is the best choice among the given options for unreasonable behaviour. Option (c) is a close one but cannot be seen as totally unreasonable.
11. If you were to sample one ball from the box marked Red and White, you would get one of two situations:
 - (a) You pick up a red ball. This would mean that the box marked red and white actually contains only red balls. We are now required to determine what the other two boxes contain—one of these would be marked red and the other white. Since all three boxes are mislabelled, the box marked white would not actually contain only white balls—and hence must contain red and white balls; while the box marked red must be containing white balls. We are thus able to determine the color of the balls in each of the three boxes correctly by just picking out one ball from the box marked **Red and White**.
 - (b) If we were to pick up a white ball from the box marked red and white also, by a similar logic we would be able to answer the question asked.
12. If you were to place Mr. Abraham and Mrs. Charlie next to each other on the circle (as stated) you would get two possible positions for Mrs. Abraham and Mr. Charlie. Using the other clue given in the question, it can be seen easily after that, that the place to the right of Mr. Abraham would have the option of placing either Mrs. Border or Mrs. Dennis in it.

Solutions for Questions 13–15:

From the basic information given in the question, we know that either Q or R have to be given 4 coins and either P or S have to be given 1 coin. Also we need to keep in mind: $Q > P$ and $R > S$ in order to solve the question.

13. There could be two cases:

Case 1: $Q = 4$ and $P = 2$, then $R = 3$ and $S = 1$.

Case 2: $Q = 2$ and $P = 1$, then $R = 4$ and $S = 3$.

Of the four options, the only consistent solution is that S is always odd.
14. There could be the following three cases:

Case 1: $R = 4$ and $S = 1$, then $Q = 3$ and $P = 2$

Case 2: $R = 4$ and $S = 2$, then $Q = 3$ and $P = 1$

Case 3: $R = 3$ and $S = 1$, then $Q = 4$ and $P = 2$

In each of the three cases $Q > P$ (which is in fact a basic condition in the question).
15. Q getting fewer coins than R, could mean one of the following cases:

Case 1: $R = 4$ and $Q = 3$, then

 - (a) $S = 2$ and $P = 1$ or (b) $S = 1$ and $P = 2$

Case 2: $R = 4$ and $Q = 2$ then $S = 3$ and $P = 1$.

In each of the above cases, the statements in options (b), (c) and (d) are necessarily true. Only the statement in the first option is not necessarily true as it fails in Case 2 above.
16. If she leaves with 30 flowers she has to offer at least more than 30 in order to be left with 0 flowers after 4 iterations of doubling and offering a certain number of flowers. Hence, the options we need to look at are 31, 32 and 33. Looking at the middle value of 32 makes most

sense because of two principal reasons-

1. In case we are left with some flowers at the end, it would mean that we would need to increase the number of flowers offered to each deity- thus in that case the number of flowers offered would need to be increased.
2. In case the flowers left at the end of the fourth deity end up as negative, then we can reduce the value of the number of flowers offered to the deity.

The other reason why we should look at only 32 is even more compelling. The logic can be called as the even number logic. Since, the flowers are doubled just before being offered to the deity, and when Rupa offers flowers to the last deity she is left with none- it must follow that the number of flowers she offers is an even number. In case you see this logic, you need to solve no further and can mark 32 as the correct answer to this question.

In case, you do not see this logic, you can still work out the numbers as follows:

30 Æ doubled to 60 Æ after offering 32 flowers to the first deity left with 28 Æ doubled to 56 Æ after offering 32 flowers to the second deity left with 24 Æ doubled to 48 Æ after offering 32 flowers to the third deity left with 16 Æ doubled to 32 Æ after offering 32 flowers to the fourth deity left with 0.

17. The solution to this question depends on the solution for question 18. The answer is 15.
18. If she starts with 15 flowers and gives 16 flowers, she would be left with 0 flowers after 4 iterations. This is the minimum number of flowers she would have to take from her home.
19. If we mix 8 grams of sucrose to 1 gram of saccharine, we would have 9 grams with a sweetness quotient of 683. The average sweetness would be $683/9 = 75.88$ which is greater than 100 times the sweetness of sucrose. If we mix 9 grams of sucrose to 1 gram of saccharine, the average would be below 74; and hence, this is the required answer.
20. The average sweetness of the mixture as defined would be:
 $(1 \text{ ¥ } 0.74 + 2 \text{ ¥ } 1 + 3 \text{ ¥ } 1.7)/6 = 7.84/6 = 1.306$. Thus, option (a) is correct.

Solutions for Questions 21 and 22:

Basic information summary: 2 housewives, 1 lecturer, 1 architect (male), 1 accountant (male), 1 lawyer.

Also, since A is married to D and the lawyer is married to D, A is the lawyer. Using the direct clues given in the question, we can reach the following conclusions:

A (lawyer—male)	Married to D
B	
C (accountant—male)	Married to F
D (housewife—female)	Married to D
E	
F (lecturer—female)	Married to C

At this point, we are left with one architect (male) and 1 housewife to place between B and E. Since

it is given that E is not a housewife, we may complete the above table as shown below:

A (lawyer—male)	Married to D
B (housewife—female)	
C (accountant—male)	Married to F
D (housewife—female)	Married to. D
E (architect—male)	
F (lecturer—female)	Married to C

The answers can be read off this table:

- 21. E is an architect.
- 22. A, C and E are males. Thus, there are 3 males in the group.

Solutions to 23 and 24:

Case 1:

__A__ __G__ __C__ __B__ ____ ____ __D__

Case 2:

__G__ __A__ __C__ __B__ ____ ____ __D__

Case 3:

__A__ __G__ __D__ __B__ ____ ____ __C__

Case 4:

__G__ __A__ __D__ __B__ ____ ____ __C__

- 23. It can be seen from the above cases that C, D and G can be placed at the ends, but F cannot be.
- 24. A can only be seated next to G, C or D as can be seen from the 4 cases above. Hence, E and A cannot sit together.

Solutions for Questions 25–27:

- 25. In order to get to the correct option in this question, you need to try to disprove each of the options by thinking of possible values for the elements in S_1 and S_2 .
Option (a), (b) and (c) would not be true in case we were to take the elements in S_1 to be 1 to 24, while the elements in S_2 as 25 to 50. Then if we change the signs of each element of S_1 we will get these values as -1,-2,...-24. It can be seen that neither of the first three option statements would be true, i.e., we would not have every member of S_1 greater than every member of S_2 [as stated in option (a)], we would not have G in S_1 [as stated in option (b)] and we would not have the largest number between S_1 and S_2 in S_1 [as stated in Option (c)].
- 26. Let the elements in S_1 be 1, 2, 3...24 and the elements in S_2 be 50, 49, 48...27, 26, 25. Then after interchanging a_{24} and a_{25} , S_1 would have (1, 2, 3, 4....22, 23 and 50) while S_2 would have (24, 49, 48, 47...28, 27, 26, 25). It is obvious that S_1 would continue to be in ascending order, while S_2 would not continue to be in the descending order. Thus, option (a) is correct.
- 27. It is obvious that since every element of S_1 has to be made equal to or greater than every

element of S_2 , L would have to be made greater than or equal to G . For this the value of x cannot be less than $G-L$. Thus option (d) is correct.

Solutions for Questions 28 to 29:

28. After the GOTO instruction, the robot is given an instruction of WALK X(2) and WALK Y(4), after which it reaches (6,6). This means that x must be 4 and y must be 2. Thus, option (c) is correct.
29. If we are prohibited from using the GOTO instruction, we would need one WALK X and one WALK Y instruction. Thus we need 2 instructions to get to the origin.

Solutions for 30–32:

	Base Amount (after Player picks his card)	Top card characteristic	Resultant	Total for Ghosh Babu for the round	Net total for Ghosh Babu all rounds combined
Round 1	8	Same suit	Ghosh babu pays ` 16 to the dealer	−8	−8
Round 2	10	Opposite color	Dealer pays ` 10 more to Ghosh Babu	+20	+12
Round 3	6	Same color	Ghosh Babu pays ` 6 to the dealer	0	+12
Round 4	8	Same Suit	Ghosh babu pays the dealer ` 16	−8	+4

From the table we can answer the questions which follow.

30. His maximum gain is ` 12 after the second as well as the third round.
31. Since, he is not borrowing any money he should be able to cover his maximum loss which is ` 8 after the end of the first round. Thus, he should have had at least ` 8 at the beginning of the game sessions.
32. Since, Ghosh Babu ends with a profit of ` 4 after his 4 rounds of game sessions, he must have had ` 96 initially.

Introduction to solving questions 33–42:

In such questions, a valid argument has to be constructed from amongst the given statements using a sequence of 3 statements—where the first two are defined as premises and the third is the conclusion. You need to see whether the conclusion can be validly and logically drawn based on the premises.

33. ACB. Since all software companies employ knowledge workers and Tara Tech is a software company, it must employ knowledge workers as stated in conclusion B
34. BAC—As increase in Carbon Monoxide is hazardous to health and traffic congestion increases carbon monoxide—the conclusion stated in C that traffic congestion is hazardous to health is correct. Note that at first glance BDE also seems to be correct, but the use of ‘some’ there is ambiguous; hence, BAC is a better solution.
35. CEA—Since all sweets are tasty and no apples are tasty (according to the premises stated in C-E), it must follow that apples are not sweets (stated in A). No other option is close to being

logical.

36. BDC is clearly logical as B states that all Polluted towns should be destroyed and D gives us that Town Meghana is polluted—C must follow.
37. ACB
38. ACD
39. ABE. Since some actors are popular and all actors are handsome, it must follow that the actors who are popular are also handsome. Thus, some popular people would also be handsome—as stated in conclusion E.
40. ECB—There is a clear link between E and C as the premises and B as the conclusion, i.e. since technology driven industry is modern and BTI is technology driven, it must be modern too.
41. ABE. Since some smart people are not blue coloured and all Golmal islanders are blue colored people, it must follow that those smart people who are not blue colored must not be Golmal islanders.
42. AEB is the correct logical sequence. ABE also looks fine, but it is not correct because, it is not necessary that only MBAs are in great demand. Hence, if you were to conclude that Ram and Sita are MBA's on the basis that MBA's are in great demand; and that Ram and Sita are in great demand—it would be a false conclusion.
43. From the basic statement of this question we know two things—one: if the orangutan is angry, he would frown upon the world; two: if the orangutan is not angry he would not frown upon the world. The opposite also holds true, i.e., if the orangutan frowns upon the world, he must be angry as well as 'if the orangutan does not frown upon the world, he must not be angry. From the options, both CB and DA are valid conclusions; and hence we should mark (d) as the correct answer. Note that even AD would be correct but it is not included in any of the options.
44. Similar to the last question, this is also an either or statement. In Either A or B situations, If A happens B will not happen; If B happens, A will not happen; if A does not happen then B happens; and if B does not happen, A would happen.
In this case DB and CA both follow.
45. Here the causality relationship is established between two events A and B. If A happens, B happens. In such situations, if A has happened it is necessary that B must happen, but the opposite is not true, i.e., if B has happened A must happen is not true as there could be other reasons independent of A for B to happen. For instance, if I tell Rajiv 'if you fall from the first floor, you would definitely break your leg' and it does transpire that Rajiv has broken his leg, then we cannot conclude that he must have fallen from the first floor. There could be many other ways in which he could have broken his leg. However, one additional conclusion that is possible to be drawn from this situation is that if B has not happened, A must also not have happened. Thus, if Rajiv has not broken his leg, we can make a valid conclusion that he must not have fallen from the first floor.

In this case it is stated that whenever Rajiv uses the internet, he dreams about spiders. AD is a valid logical deduction. If he did not dream about spiders, it must follow that he must not have

used the internet.

46. This is also an 'If A happens, B happens' situation. Both AB and CD are valid conclusions.
47. **A is valid:** Since some who laugh are sphinxes, and no cowboys laugh, it follows that those sphinxes that laugh cannot be cowboys.
D is valid: The whistlers who are crazy people must be paints.
Thus, option (c) is correct.
48. **C is valid:** Since all pizzas are snacks and some meals are pizzas, it must follow that meals which are pizzas are snacks.
D is valid: Since all barkers are sloth bears and some barkers are musk deer, it must follow that the sloth bears who are barkers must be musk deer. Hence, the conclusion—some sloth bears are musk deer is valid.
49. A is not valid—just because water buffaloes are not dinosaurs, we cannot conclude that they are not prehistoric. There may be other prehistoric creatures than dinosaurs.
B is valid: Crocodiles and frank people are mutually exclusive groups (from the second statement) and also politicians are within the frank people group. Thus, no crocodile can be a politician.
50. **B is valid:** Curios which are glass things must be transparent.
C is valid too: The logical conclusion that can be derived from the first two statements of C is that All XY must be brittle. The conclusion 'Some XY are brittle' is correct because if all XY are brittle, some XY would also be brittle.
Thus option (c) is correct.
51. **C is valid:** The men who are cops must be brave as all cops are brave. Thus option (b) is correct.
52. If all IIMs are in India and no BIMs are in India—we can make both conclusions as given in statements A and B, i.e., No IIMs are BIMs and no BIMs are IIMs. Thus, both A and B are valid. C and D on the other hand are ambiguous and are not valid conclusions. Hence, option (a) is correct.
53. **C is valid:** Young people who are citizens of Yes Island would speak only the truth. Thus, option (c) is correct.
54. **C is valid:** Creatures that are oviparous would obviously not be mammals. Option (c) is correct.
55. **B is valid:** Since giants climb beanstalks, and some chicken do not, the chicken which do not climb bean stalks must not be giants. Option (b) is correct.
56. **C is valid:** As eating grass is mutually exclusive between Bulls (who do) and matadors (who do not), no matadors would be bulls.
D is valid too: Some skunks who drive Cadillacs, would also be polar bears. These bears would drive Cadillacs.
57. Using statement A, we know that B is not a mathematician, and neither is C. But we cannot make a judgment about A—he may or may not be a mathematician. Thus we cannot say how many of A, B and C are mathematicians.

Using Statement B, we cannot again say how many of A, B and C are mathematicians because A might be a mathematician, B too might be a mathematician and C could also be a mathematician.

Even if we use both the statements we still would not be able to make a judgment about A—he could or could not be a mathematician.

Thus, we mark option (d).

58. From A alone we know that A and B definitely passed the exam, while from B alone we definitely know that neither C nor D has passed the exam. Thus, if we use both A and B, we know definitely that 2 among the four students has passed the exam.
59. Data is insufficient even if we were to use both statements together as we would not know, how many of the 70 plants with red flowers were coming out of white seeds and how many of them were coming out of black seeds.

Section 2

Past Years' Solved Questions from the XAT

•• XAT 2012

•• XAT 2011

•• XAT 2010

•• XAT 2009

•• XAT 2008

INTRODUCTION TO REASONING IN THE XAT

Reasoning (verbal, logical and analytical) has always had a major role to play in the XAT examination. This is evident from the fact that reasoning/thinking questions have been a constant presence in two of the three sections of the XAT. These sections are:

- (i) Verbal Ability and Logical Reasoning
- (ii) Analytical Reasoning and Decision Making

The quality of questions that have appeared in these sections has normally been of a very high standard— requiring extreme clarity of thought and solving processes from the aspirants' side. A high proportion of the total number of questions in the XAT, that can be classified under reasoning are either of the LOD 2 or LOD 3 level of difficulty. This is in keeping with the overall trend of the XAT exam—where the quality of questions is of a very high standard.

Besides, you also need to realise that the analytical reasoning and decision making section of the XAT is one of the critical elements for cracking this examination.

The major reasoning question types that have been present in the XAT have included:

In the Verbal Ability and Logical Reasoning Section:

(i) Argument analysis:

This category of questions is largely seen in the first of the two sections mentioned above & has been an integral part of the Verbal Ability and Logical Reasoning section.

The key skills tested are:

- (a) Your ability to understand an argument;
- (b) Your ability to catch the reasoning behind the argumentation presented;
- (c) Your ability to spot assumptions made;
- (d) Your ability to identify evidence that would either strengthen or weaken the argument;
- (e) Your ability to identify logic that would support/oppose the argument being made;
- (f) Your ability to spot what is consistent and what is not consistent with respect to the argument;
- (g) Your ability to spot inferences and implications that arise out of the argument.

The section titled “Analytical Reasoning and Decision Making” has the following types of questions which you would encounter as you go through the questions from the past years' XAT papers in this portion of this book:

(i) Quantitative Reasoning & Puzzles:

These questions typically revolve around your ability to understand/grasp the quantitative logic behind a situation. In a lot of ways these questions test your ability to sense the numerical logic in situations and work out the question/s asked based on the same.

(ii) Logical Reasoning questions based on Arrangements, Constraint based selections, Team formations, Puzzles, Conditions based Reasoning puzzles, etc.:

These are the traditional Logical Reasoning questions, which involve direct and indirect clues about a few variables, which have to be matched with each other. (e.g. 5 people wear 5 different coloured shirts and work in 5 different companies, etc).

- (iii) Quantitative decision making involving most economical/profitable decisions to be made in given scenarios:

These are questions based on caselets or real life situations. The situation is described in detail (with a lot of numbers used to describe the case situation) and typically involves a lot of number crunching. What distinguishes these caselets from other decision making caselets is that the situation described as well as the question asked would depend largely on the numerical calculations involved inside the case.

Hence, your ability to sense the various quantitative factors in the given situation and how these inter-play with each other becomes a crucial element of your solving process.

For instance, a situation might be described to you where an individual has to make a choice of different possible ways to travel to and fro from his hometown to a destination—and various modes of transportation with the time involved and costs involved are given. You then would be asked to choose the most economical or the most time saving routes of travel from amongst those provided.

- (iv) Qualitative decision-making questions involving ethical/moral dilemmas and corporate and HR situations:

These are again real life situations described in a caselet form, with a real life problem vexing the protagonist of the case. You are expected to understand the moral/ethical/real life dilemma described in the situation and come up with the best possible resolution to the questions asked. In spite of these types of questions normally having a very subjective bias—it can be said that as far as the XAT is concerned, the questions they have asked and the kinds of options they have laid out there has always been one clear answer to the question. Hence, these questions can be said to be testing your clarity of thinking.

- (v) Word formation puzzles:

This question type is a typical question category that is exclusive to the XAT. In these questions, rules are provided for word formation based on certain interplay of the alphabets (like saying that in a certain language words are only 4 or 5 letters long and always start with a vowel and have at least 2 vowels in each valid word). Based on your interpretation of these rules you would need to find out what words and sentences are valid in the given language.

Answer Questions 1 to 3 on the basis of the information given in the following case.

Due to increased competition, Ginger Automobiles, the Indian subsidiary of Pepper Automobile Company (PAC) reported lower sales and profits. PAC expects its new model *Limo*, developed especially for value conscious customers of India and China, to revive its fortunes. In order to prevent customers from buying competing products, PAC announced the launch of *Limo* six months before schedule. Due to unrest in its Indian supplier's plant, deliveries of essential components for its main plant was hampered, and hence it decided to launch *Limo* in China only as per the original plan. Within a short span of time, *Limo* captured 30% market share in China, which was 200% higher than expected. Indian customers who looked forward to purchasing *Limo* were becoming increasingly unhappy due to the non-availability of *Limo* in India. Ginger's dealers were worried about loss of business from the customers who might switch to other cars.

1. **Statement I:** In the Chinese market, *Baft* and *Hebe*, are competing models in *Limo*'s target market. Due to increase in the sale of *Limo* by 200%, *Baft* and *Hebe* saw their market share decline by 10%.

Statement II: *Baft* and *Hebe* were not desired by the customers due to their new features.

Which of the following conclusions can be most justifiably made?

- (a) I alone
 - (b) II alone
 - (c) Either I or II
 - (d) Neither I nor II
 - (e) I and II together
2. Unhappy customers will not only leave the company, but also spread negative publicity about the company. The best way, among the options below, to deal with customers is:
- (a) suggest customers to wait.
 - (b) suggest customers to consider purchasing any of the other PAC's models available in showrooms, with a substantial discount along with gifts.

- (c) suggest PAC to treat Indian and Chinese markets equally.
 - (d) promise the top management of PAC higher sales/profit from Indian market compared to Chinese market.
 - (e) suggest the top management of PAC to manufacture essential components in either India or China.
3. Mr. Murugan from Chennai experienced the comfort of *Limo* during his visit to China. He was willing to deposit an approximate price of *Limo* to buy the first available unit from Mr. Ahmed, a dealer in Chennai, known for fair dealing. Ginger Automobile is yet to announce the actual price, and the process for allocation of the vehicles. In order to maximise his cash flow, Mr. Ahmed should:
- (a) collect the amount from Mr. Murugan. Later when the delivery is delayed, blame it on PAC's problems.
 - (b) collect 50% as advance and the remaining 50% after the confirmation of launch date by Ginger Automobiles.
 - (c) collect the amount Mr. Murugan is willing to deposit after clarifying that delivery is subject to the company policy.
 - (d) not collect the amount, but suggest to Mr. Murugan to write to Ginger Automobiles.
 - (e) collect the amount and transfer it to the account of Ginger Automobiles, instead of keeping it in his personal account.

Answer Questions 4 and 5 on the basis of the following letter.

To the Chairman

Dear Mr. Sailesh,

At the December 3, 2011 meeting, it was decided that no two officers would hold positions on the same committee. It has recently come to my attention that both Chaitanya Rao and Ajit Singh will be serving in same capacity on the Cultural Committee, and both have been nominated for officer status. As you know, this is in direct disregard for the rules as voted by the Members Council last December 3, 2011. I hope that sufficient action will be taken by the Disciplinary Committee (on which both of the above are members) so that this problem will be remedied.

Sincerely,

Arvind Singh

4. Which of the following is an essential flaw that the writer of the letter overlooked?
- (a) Rao and Ajit are already serving together on the Disciplinary Committee.
 - (b) The Chairman has no power in the matter.
 - (c) The Members Council cannot pass rules limiting members.
 - (d) Rao and Ajit are yet to be confirmed as officers.
 - (e) Cultural Committee is only active during the annual festival.
5. If both the nominations are confirmed, which of the following exhaustively and reasonably, describes actions that may occur in the near future?
- (a) Arvind resigns his membership.

- (b) Either Rao or Ajit resigns his membership.
- (c) Ajit resigns his post on the Cultural Committee.
- (d) Rao resigns his position on the Cultural Committee.
- (e) Either Rao or Ajit resigns his position from the Cultural Committee, and the other resigns his position on the Disciplinary Committee.

Answer Questions 6 to 9 on the basis of the information given in the following case.

Tina a blast furnace expert, who works as a technology trouble-shooter stays in Jamshedpur. She has got an important assignment in Delhi, which requires six hours to complete. The work is so critical that she has to start working the moment she reaches the client's premises.

She is considering various options for her onward and return journey between Jamshedpur to Delhi.

A quick search revealed that ticket from Jamshedpur to Delhi is available in two trains. Trains 12801 and 12443 depart from Jamshedpur station at 06:45 hrs and 15:55 hrs and reach Delhi next day at 04:50 hrs and 10:35 hrs respectively. Trains 12444 and 12802 start from Delhi at 17:20 hrs and 22:20 hrs and reach Jamshedpur next day at 10:35 hrs and 20:05 hrs respectively.

Another option is to reach Ranchi by a three hour road trip and take a flight to Delhi from Ranchi. The distance between Ranchi and Delhi is covered in 105 minutes both-ways by any of the scheduled flights. Air India operates two flights, AI 9810 and AI 810, which depart Ranchi at 8:00 hrs and 15:25 hrs respectively. Flight number IT-3348 operated by Kingfisher Airlines departs Ranchi at 19:20 hrs. Return flights operated by Air India, AI 9809 and AI 809, depart Delhi at 5:50 hrs and 11:00 hrs respectively. Flight number IT-3347 operated by Kingfisher Airlines departs Delhi at 17:10 hrs.

From Tina's home the Jamshedpur railway station is five minutes drive, and her destination at Delhi is 90 minutes and 30 minutes drive from the airport and the railway station respectively. One has to reach the airport at least one hour before the scheduled departure to complete the boarding procedure. At every railway station she loses five minutes in navigating through the crowd.

6. If Tina wants to minimise the total time out of Jamshedpur, the best option for her, from the options given below, is:
 - (a) Depart by AI 9810 and return by IT 3347
 - (b) Depart by AI 9810 and return by train number 12802
 - (c) Depart by IT 3348 and return by AI 9809
 - (d) Depart by Train number 12443 and return by train number 12444
 - (e) Depart by AI 9810 and return by train number 12444
7. Tina gets a message that her work has to be completed between 9:00 hrs. and 17:00 hrs. If she wants to minimise the total time out of Jamshedpur, the best option for her, from the options given below, is:
 - (a) Depart by Train 12443 and return by Train 12444
 - (b) Depart by Train 12801 and return by Train 12802
 - (c) Depart by AI 9810 and return by AI 9809
 - (d) Depart by AI 810 and return by AI 9809
 - (e) Depart by IT 3348 and return by IT 3347

8. Tina has to appear for an exam on 8th of January in Jamshedpur and she can start from her residence in Jamshedpur only after 16:00 hrs of the same day. Choose the option, from the options given below, that will help her to minimise the total time out of Jamshedpur.
- (a) Go by Train 12443 and return by Train 12444
 - (b) Go by Train 12443 and return by AI 9809
 - (c) Go by IT 3348 and return by Train 12801
 - (d) Go by AI 810 and return by Train 12801
 - (d) Go by AI 9810 and return by AI 9809
9. If Tina decides to minimise the in-between waiting period, the option that she should choose from the options given below, will be:
- (a) Go by Train 12801 and return by IT 3347
 - (b) Go by Train 12443 and return by Train 12802
 - (c) Go by AI 9810 and return by Train 12802
 - (d) Go by AI 810 and return by AI 9809
 - (e) Go by IT 3348 and return by AI 809

Answer Questions 10 to 15 on the basis of the information given in the following case.

Teknik Group of Industries had businesses in different sectors ranging from manufacturing, construction, fish farming and hotels. These different businesses operated as semi-independent units managed by the unit level managers. Teknik's management had an internal consultancy group called as Business Advisory Group (known internally as BAG). The 15 experts in the BAG were hired personally by Mr. Teknikwala, the owner of Teknik, who wanted this core group of experts to help his organisation grow fast without facing the typical growth hurdles. Most of them were specialists in fields like law, information technology, human resource management and operations management. Almost all of them had experience spanning decades in the industry. Whenever any of the units faced any significant problems, the unit level managers would put up a request for help to the BAG. The problems ranged from installation of internal MIS systems, to financial advice related to leasing of equipment, to handling of employee grievances.

Over a period of 20 years, Teknik's revenues grew from ` 100 crore to ` 10,000 crore with the guidance of the BAG and due to Mr. Teknikwala's vision. Given its reputation in the industry, many people wanted to start their careers in the BAG. Often young MBAs fresh out of business school would apply. However their applications used to be rejected by Mr. Teknikwala, who had a preference for people with extensive industry experience.

Things changed after the unfortunate demise of Mr. Teknikwala. His daughter Miss. Teknikwali took up the family business. She was an MBA from one of the premier business schools, and was working in a different company when Mr. Tekinwala passed away. She preferred that BAG develop new ideas and therefore inducted fresh graduated MBAs from premier business schools. She personally supervised the recruitment and selection process. Now the entire group constituted of 50 specialists, out of which 35 were the old time members. She also changed the reporting relationships in the BAG group with some of the older members being made to report to the new members. In the IT team, Mr. Shiv, a newly recruited MBA, was made the in-charge.

This came as a shock to the older members. However, as most of them were on the verge of retirement, and it would be challenging to search for new jobs while competing with younger professionals, they decided to play along.

After one month, all business units were caught up in the ERP fever. This was an idea pushed by Ms Teknikwali who felt the need to replace the old legacy systems with the latest ERP system integrating all the units of Teknik. This was heavily influenced by her experience in the previous company where an ERP system was already up and running. Therefore she was not aware of the difference between installing an ERP system and working on an already installed one.

The ERP implementation in Teknik Group required extensive coordination with the senior level managers of all units and it represented an extra work for those who were involved. This coordination was required to understand the different work processes and the users' requirements. This coordination activity was being extensively managed by the old timers as they were familiar with internal processes and people in the different units. An external consultant was also hired for customisation and implementation.

After two months, BAG teams had to fortnightly present their progress to Ms. Teknikwali's team. In the last meeting Ms. Teknikwali was dissatisfied. She explained her thinking that since ERP impacted every aspect of the business, the roll out had to be done faster. She wanted Mr. Shiv to get the implementation completed ahead of schedule. In the meeting she asked Mr. Shiv to get the people in IT team to be more productive. Not willing to disagree, Mr. Shiv committed to a roll-out schedule of complete ERP system in 6 months instead of the earlier decided 14 months.

Next day, Mr. Shiv presented the revised project milestone to the BAG members. He told them that in order to meet the deadline, the members were expected to work on week-ends till the completion of the project. Along with that, they were also expected to maintain their earlier standards of delivery time and quality for the normal trouble-shooting and internal advisory work. Mr. Shiv also pointed out that anyone whose performance did not meet the expectations would be subject to formal disciplinary action.

The meeting ended without any member commenting on Mr. Shiv's ideas, although he heard a lot of mumbling in the corridor. Over the week, Shiv noticed that the members seemed to avoid him and he had to make extra effort to get ideas from them. After a fortnight Shiv reviewed the attendance register and found that Mr. Lal, an old time member, had not come during the weekends and certain decisions were held up due to lack of inputs from Mr. Lal. Mr. Shiv issued a written reprimand to Mr. Lal. He was speechless on receiving the reprimand but kept silent.

It has been three days since that incident. Some of the senior members had put in a request for transfer to other business units. It was rumoured that four senior legal experts had agreed to an offer from a law firm. Other senior members would sporadically come in late to work, citing health reasons. Almost all senior members now wanted a weekly work-routine to be prepared and given to them in advance so that they could deliver as per the schedule. This insistence on written communication was a problem as urgent problems or ad-hoc requests could not be foreseen and included. Also normal services to other business units were being unattended to, and there were complaints coming from the unit heads.

10. Which of the following could have been a better response of Mr. Shiv to Ms. Teknikwali's request to re-schedule the ERP implementation?

- (a) Look at industry best practices regarding fast-tracking of ERP projects and then commit to a new deadline.
 - (b) Consult the external consultant who was involved with ERP customisation and implementation.
 - (c) Create a smaller team of all the new recruits of BAG and present the idea to them alone.
 - (d) Eliminate the reliance on external consultants as they would be slow.
 - (e) Present the idea to BAG members and ask them to look at the feasibility of the entire plan.
11. Which of the following can be identified as the immediate cause for the problems in BAG?
- (a) Ms. Teknikwali's decision to appoint Mr. Shiv as project lead for ERP implementation.
 - (b) The incompetence of the consultant who was implementing the ERP project.
 - (c) Lack of information about what was happening in the ERP project.
 - (d) Infighting between new recruits and the older members of BAG group.
 - (e) Unilateral decision making by Mr. Shiv.
12. How should Mr. Shiv cope with the situation now? Choose the best option, considering Mr. Shiv's career would be at stake if the ERP project fails, and assuming that for carrying out the options, he has the necessary authority to do so.
- (a) Resign from BAG. The project cannot be done as per the re-scheduled time-table. Get a job in another company based on BAG's brand name.
 - (b) Inform Ms. Teknikwali about the situation and get help from her to deal with the old time members. Some old members need to be fired so that others are also disciplined.
 - (c) Align the new members of the BAG group to his side by promising them rewards at the end of the project. Obtain approval from Ms. Teknikwali for the same.
 - (d) Develop work-routines aligned to the ERP project requirements. Hire extra resources for dealing with other ad-hoc requirements and for the ERP project requirements.
 - (e) Create a joint team of old members and new members within BAG to take care of ad-hoc requirements. They could be involved in out-bound programmes like mountaineering etc., which will be conducted during week-ends.
13. Of all the problems being faced in BAG, which of the following is neither discussed nor hinted at?
- (a) Ms. Teknikwali's lack of faith on older members to implement new ideas.
 - (b) The inability of the younger members to work along with the older members of the BAG.
 - (c) Mr. Shiv's intention to impress Ms. Teknikwali by agreeing to a tougher deadline.
 - (d) Ms. Teknikwali's lack of understanding of the complexity of an ERP implementation.
 - (e) Mr. Shiv's lack of understanding of the sensitivities of the older members of BAG.
14. After her father's demise, the best way Ms. Teknikwali could have gone about dealing with the BAG group would have been to:
- (a) discuss with the members as to what their views were about the company and solicit ideas on how to make it grow further.

- (b) retire the entire team and hire a fresh team according to her criteria and her requirements.
 - (c) hire an external consultant who would have interacted with the BAG members on her behalf.
 - (d) ask the unit managers about the BAG group's performance and productivity. After that have discussion with BAG members about unit managers' performance.
 - (e) break down BAG into different sub-groups. It would be easy to tackle one sub-group at a time and do what she wanted to achieve.
15. It can be inferred from the above case that implementation of an ERP package in an organisation requires creation of a team that has:
- (a) a mixture of experienced employees and fresh graduate employees
 - (b) only young people with education in top schools and colleges
 - (c) sufficient number of people who are networked with powerful stakeholders in the organisation
 - (d) right amount of problem solvers along with those who are abreast of the latest ERP technology
 - (e) people who have been involved with operations for a long duration of time along with people who are aware of the latest in ERP technology

Answer Questions 16 and 17 on the basis of the information given in the following case.

Vivekananda Memorial Elocution Competition (VMEC) in Viswavijay Public School (VPS) has history of forty years. Apart from the founder's day and annual day celebrations, it is the most important event of the school.

In recent times, due to the increased popularity of reality shows on television channels, and for various other reasons, the elocution competition lost its appeal. Interest of both students and parents has been eroding over a period of time. To ensure sufficient audience, Mr. Ivan, Head of English Department, introduced choral recitation for junior section as a part of elocution competition. Three classes, each consisting of forty students, get short-listed for the final performance of choral singing on the day of VMEC. Most of the parents and family members of these students attend the function to encourage them. This initiative increased the number of people attending the elocution competition.

Some teachers are unhappy with the emphasis given on the elocution competition, since they are expected to be present at the school on the day of competition, which normally happens on a weekend to accommodate the working parents. The teachers were not granted leave on the day of VMEC and they used to be unhappy regarding this aspect.

16. Ms Shabina, the principal of VPS, is aware that some of her teachers are unhappy. She wants to be seen as fair and just. Which is the best option that she should exercise?
- (a) Introduce separate music and dance competitions in same format as the elocution competition.
 - (b) Appropriately compensate those teachers who volunteer to come for the extra day.
 - (c) Appoint a committee of teachers, parents and management representatives to come up with possible suggestions within a deadline.
 - (d) Appoint a committee of teachers to come up with possible suggestions, and ensure that

majority of committee members are staunch supporters of the current practices.

(e) Exercise the authority of the principal because she wants to retain all traditions.

17. A group of unhappy teachers have come up with a list of action plans for the consideration of their colleagues. The action plans are listed below.

I. Exposing Mr. Ivan's intentions behind the inclusion of choral recitation.

II. Conduct an open house discussion to gauge the unhappiness and to identify possible solutions.

III. Introduce music and dance competition in the same format as elocution competition.

IV. Demand compensation for their work on the day of VMEC.

Mr. Zacharia, one of the senior teachers and a well-wisher of VPS, is asked to go through the action plans and make recommendations that benefit VPS the most. He would recommend:

(a) Options I and II

(b) Options II and IV

(c) Options I and III

(d) Options I and IV

(e) Options I, II and IV

Answer Questions 18 to 20 on the basis of the information given in the following case.

Dev Anand, CEO of a construction company, recently escaped a potentially fatal accident. Dev had failed to notice a red light while driving his car and attending to his phone calls. His well-wishers advised him to get a suitable replacement for the previous driver Ram Singh, who had resigned three months back.

Ram Singh was not just a driver, but also a trusted lieutenant for Dev Anand for the last five years. Ram used to interact with other drivers and gathered critical information that helped Dev in successfully bidding for different contracts. His inputs also helped Dev to identify some dishonest employees, and to retain crucial employees who were considering attractive offers from his competitors. Some of the senior employees did not like the informal influence of Ram and made it difficult for him to continue in the firm. Dev provided him an alternative job with one of his relatives.

During the last three months Dev has considered different candidates for the post. The backgrounds of the candidates are given in the following table.

Name	Age	Educational Qualification	Experience	Expected Salary(₹)	Remark
Sunder	32	Post-graduate	Seven years of driving experience	18,000 per month	Ex-employers are highly satisfied. Their only concern is about his tendency to switch jobs after every six months. Enjoys the newness in every job but tends to lose interest after six months. Not willing to commit for any more than six months
Mani	23	Studied up to Standard IX	One year	8,000 per month	Claims to have more than one year of experience, but can't provide any certificate to substantiate it. He has received a hike of ₹ 2,000 last month on account of his good performance as a driver.
Chintan	44	Graduate	20 years	20,000 per month	Working as a driver for the last one year after losing his previous job of a stenographer. He has been forced to take up the job of a driver.

Bal Singh	40	Literate	More than 20 years	15,000 per month	Cousin of Ram Singh. Substituted Ram as Dev's driver whenever Ram was on leave. Currently working as a driver with Dev's in-laws. Strongly recommended by Ram. His knowledge and contacts in the firm are as good as Ram's.
Chethan	38	Standard XII	10 years	12,000 per month	Working as a temporary driver with Dev's major competitor for the last three years. The competitor has offered Chethan's service to Dev on a temporary basis. Chethan has also expressed his willingness to work on a long term basis, provided he is given an annual increment of ` 500, which is reasonable as per the market condition.

Dev is primarily looking for a stable and trustworthy driver, who can be a suitable replacement for Ram. His family members do not want Dev to appoint a young driver, as most of them are inexperienced. Dev's driver is an employee of the firm and hence the appointment has to be routed through the HR manager of the firm. The HR manager prefers to maintain parity among all employees of the firm. He also needs to ensure that the selection of a new driver does not lead to discontent among the senior employees of the firm.

18. From his perspective, and taking into account the family's concerns, Mr. Dev would like to hire

(a) Chethan

(c) Bal Singh

(e) Sunder

(b) Chintan

(d) Mani
19. In order to resolve the conflicting preferences, one of Dev's friends suggested Dev, his family members and the HR manager to identify their most and the least preferred candidates without considering the concerns of other stakeholders.

I. Dev's most and least preferred candidates: Bal Singh and Chethan respectively

II. Family members' most and least preferred candidates: Bal Singh and Chintan respectively

III. HR manager's most and least preferred candidates: Chethan and Bal Singh respectively

Which of the above three statements is/are in conformity with the information provided in the passage?

- (a) Option I

(c) Options I and II

(e) Option I, II and III

(b) Option II

(d) Options II and III
20. Who among the following five candidates is most likely to be rejected by the GM (HR)?

(a) Chethan

(c) Bal Singh

(e) Sunder

(b) Chintan

(d) Mani

Answer Questions 21 and 22 on the basis of the information given in the following case.

Saral Co. is operating in seven north-eastern states of the country. The organisation has a history of participative decision making, wherein people deliberate openly about pros and cons of every important decision, and a broad consensus is taken before taking the final decision. In Saral Co. every employee gets a salary proportional to the sales achieved. A new General Manager (GM) joined at the beginning of this month and challenged the organisation's sole focus on sales to determine salaries. He urged the top management to include two more additional parameters in determining the salaries of the employees, viz. collection of information about competitors and the quality of relationship with the retailers.

21. Manohar, the highest earning employee for the last three years, vehemently opposes the GM's proposal. Which of the following could be most likely reason for him to oppose the proposal?
- (a) He considers the proposal as a serious threat to his favourable position in Saral Co.
 - (b) He is not interested in collecting the information regarding competitors.
 - (c) No clarity regarding the relative importance of the three parameters.
 - (d) He is not interested in maintaining quality relationship with retailers.
 - (e) He may need to work harder to earn the highest salary.
22. The top management of Saral Co. refused to implement the proposal of the new GM from the beginning of next month. Which of the following could be the most justified reason for the management's refusal?
- (a) To ensure that no manager will get credit for a major change soon after joining.
 - (b) To avoid attracting criticism for their failure to implement a similar scheme.
 - (c) His past experience is limited to seven north-eastern states only.
 - (e) The GM is new to the organisation and he would require some time to implement the new plan.
 - (d) The top management would need time to deliberate and get consensus.

Answer Questions 23 to 25 based on the case given below.

Ethical – a person is called unethical, when he deviates from principles. The principles and their use is often guided by two definitions:

Moral: Society's code for individual's survival.

Ethics: An individual's code for society's survival.

Naresh was a small time civil contractor in a small city. His major clients were the residents who wanted ad-hoc work like painting, building extensions to be done. His just prices had made him a preferred contractor for most of the clients. He always followed the principle that the client had to be kept happy—only by doing so it would be a win-win situation for both. However due to the unpredictability of such orders from residents, Naresh used to be idle for substantial part of the year. As a consequence, he could not expand his business.

His two children were growing up and his existing business could not support their expenses. The medical expense of his elderly parents was another drain on his resources. The constant rise of prices in medical care and medicines was another issue. For Naresh, family's concern was predominant. Naresh was, therefore, under pressure to expand his business. He was the sole earning member of his family, and he had to ensure their well being. He thought that by expanding his business, not only

would he be able to care for his family in a better way, as well as offer employment to more number of masons and labourers. That would benefit their families as well. Naresh drew the boundary of his society to include himself, his family members, his employees and their family members.

For expansion, the only option in the city was to enlist as a contractor for government work. Before deciding, he sought advice from another contractor, Srikumar, who had been working on government projects for a long period of time. Srikumar followed the principle of always helping others, because he believed that he would be helped back in return some day. Srikumar had just one advice “The work is given to those who will win the bidding process and at the same time will give the maximum bribe. Prices quoted for work have to include bribes, else the bills will not get cleared and the supervisors will find multiple faults with the execution of work. This ensures survival and prosperity for contractors”.

When asked about other contractors, Srikumar said “The government contractors are like a micro-society in themselves, almost like a brotherhood. Within that, they are highly competitive; however towards any external threat they are united to ensure no harm happens to any of their members”.

23. Naresh decided to work as a government contractor. Following Srikumar’s advice, he inflated the prices so that he could pay the bribes out of the bills received.

- (a) Naresh is now totally unethical.
- (b) Naresh cannot be called totally ethical.
- (c) Naresh can be called ethical when it suits him.
- (d) Naresh is ethical to some extent.
- (e) Naresh is being totally ethical.

24. A new supervisor had joined a government department where both Naresh and Srikumar were bidding for work. During the bidding process for a particular project, in an open meeting with all contractors and officers from the department, he produced a document which had the rates at which Naresh had worked for private clients for similar building related work. He accused Naresh and Srikumar of over-pricing for government work and threatened to disqualify them from the bidding process, if the rates are not brought down. Faced with that situation, Naresh gave a written reply that “I use materials of inferior quality for private work, and that is the reason for the price difference”. Srikumar supported Naresh in the meeting by saying that he had seen Naresh’s work and he agreed. In this situation, it can be concluded that:

- (a) both Naresh and Srikumar are unethical.
- (b) Naresh is unethical while Srikumar is not.
- (c) both Naresh and Srikumar are ethical.
- (d) Naresh is ethical to a large extent, but no conclusion can be made about Srikumar.
- (e) Srikumar is unethical, but no conclusion can be made about Naresh.

25. Lankawala, another contractor, when faced with the new supervisor’s demand to reduce prices for government work, asked him to guarantee that no bribes would be taken, and only then prices would be reduced. This was said in front of everyone. At this the supervisor forced Lankawala out of the meeting and threatened to black-list him. Lankawala did not say anything and walked away. Blacklisting of a contractor by one government department implied that Lankawala would not be able to participate in any government departments’

works.

In late evening, the city was abuzz with the news that the supervisor's dead body was seen on the railway tracks. In the investigations that followed, no one who attended the meeting recounted the happenings in the meeting to the police. Getting involved in murder cases could lead to unpredictable outcomes such as becoming the potential suspect, or an accessory to the crime. Furthermore, cases could drag on for years, and one would have to appear in court as witnesses in response to court's summons. This, for a contractor, was a serious threat to his business due to the disruptions created. However, Naresh wanted to speak out but was pressurised by Srikumar and other contractors not to, and as a result he did not. Due to this, the case was closed unresolved with no one found guilty.

In this situation, it can be concluded that:

- (a) Srikumar is immoral, but ethical, while Naresh is not unethical.
- (b) Naresh is ethical and moral, while other contractors are immoral and unethical.
- (c) Naresh, Srikumar and other contractors are both immoral and unethical.
- (d) Other contractors are moral, and they prevented Naresh from being immoral.
- (e) Other contractors are unethical, but no conclusion can be made about Naresh.

Answer Key

1. (d)	2.(b)	3. (c)	4. (d)	5. (e)
6. (b)	7. (d)	8. (e)	9. (d)	10. (e)
11. (e)	12. (d)	13. (b)	14. (a)	15. (d)
16. (b)	17. (b)	18. (c)	19. (a)	20. (c)
21. (e)	22. (e)	23. (b)	24. (d)	25. (a)

Solutions:

1. Since *Baft* and *Hebe* have not been mentioned in the information given in the passage, any conclusion about them in the statements 1 and 2 is not possible. So the correct answer is neither 1 nor 2, i.e option (d).
2. Since the model is delayed it is unfair on the part of the dealer to force the customer to wait. However, the dealer will suffer losses if the customer goes to some other company. So for those customers who are in a hurry to buy a vehicle the best option will be to suggest a similar or another model that the company is offering which would suit the customer's taste and also give him/her a good discount so as to respect his brand loyalty and also to provide a sort of compensation. Thus option (b) is the most suitable option in this case.
3. As the company is still not clear about the actual price of the car and the customer is willing to pay, which would also help the dealer in sustaining his cash flows, the best possible deal would be to take whatever advance payment the customer is giving but at the same time make sure that the customer knows about the uncertainty in the delivery of the car which would be

totally dependent on the company. Once the customer is comfortable with this scenario, the dealer could collect whatever payment the customer is offering. Option (c) is the correct answer.

4. The essential error is that the person has assumed erroneously that as both have been nominated for the same status they might be holding the same position which is yet not certain, so this presumption is the flaw in this case as till the time the letter was written the order had not been finalised. Thus option (d) is the correct answer.
5. Logically if 2 people are holding same positions in 2 committees, one will resign from each one so that both are holding one-one position each, thus option (e) is the best option.

Solutions for Questions 6 to 9:

The best approach for this question is to first make a table/grid encapsulating all the information.

The following grid would do so:

Trains:

From Jamshedpur to New Delhi

Train no.	Departure	Arrival	Total time	Time including travel to and from station & time for crowd negotiation	Arrival time at final destination
12801	6:45 AM	4:50 AM	22 hrs 5 minutes	22 hrs 50 minutes	5:25 AM
12443	3:55 PM	10:35 AM	18 hrs 40 minutes	19 hrs 25 minutes	11:10 AM

From New Delhi to Jamshedpur

Train no.	Departure	Arrival	Total time	Time including travel to and from station & time for crowd negotiation	Arrival time at final destination
12802	10:20 PM	8:05 PM	21 hrs 45 minutes	22 hrs 30 minutes	8:15 PM
12444	5:20 PM	10:35 AM	17 hrs 15 minutes	18 hrs	10:45 AM

Flights:

From Ranchi to New Delhi

Flight no.	Departure	Arrival	Time including travel to and from airport & waiting time at airport (3 hours + 1 hour + 90 minutes)	Arrival time at final destination
AI 9810	8:00 AM	9:45 AM	7 hrs 15 minutes	11:15 AM
AI 810	3:25 PM	5:10 PM	7 hrs 15 minutes	6:40 PM
IT 3348	7:20 PM	9:05 PM	7 hrs 15 minutes	10:35 PM

From New Delhi to Ranchi

AI 9809	5:50 AM	7:35 AM	7 hrs 15 minutes	10:35 AM
AI 809	11:00 AM	12:45 PM	7 hrs 15 minutes	3:45 PM
IT 3347	5:10 PM	6:55 PM	7 hrs 15 minutes	9:55 PM

Once we have these tables in front of us we can move into the questions and their options.

6. We need to check each of the options and see which one gives her the least time out of Jamshedpur.

The first option (AI 9810 and return by IT 3347): Involves leaving Jamshedpur at 4 AM on the first day, reaching the workplace at 11:15 AM on the same day, working till 5:15 PM the same day and reaching the airport at 6:45 PM. IT 3347 would already have left for the day. Hence, if she returns by IT 3347 she would have to reach back home at 9:55 PM on the next night.

Thus, she leaves at 4 AM on day 1 and reaches back at 9:55 PM on Day 2. Total time = 41 hrs 55 minutes

Option (b): AI 9810 and return by train no:12802—Involves leaving Jamshedpur at 4 AM on the first day, reaching the workplace at 11:15 AM on the same day, working till 5:15 PM and reaching the railway station at 5:45 PM, on the same day. Her return journey train would start at 10:20 PM and make her reach home at 8:15 PM on the next day.

Thus, she leaves at 4 AM on day 1 and reaches back at 8:15 PM on Day 2. Total time = 40 hrs 15 minutes.

Option (c): IT 3348 and return by AI 9809—Involves leaving Jamshedpur at 3:20 PM on the first day, reaching the workplace at 10:35 PM on the same day, working till 4:15 AM the next day and reaching the airport at 5:45 AM. She cannot make it to the cutoff time for catching AI 9809 on that day. Thus, if she returns by AI 9809 she would have to reach back home at 10:35 AM on the next day (i.e. day 3)

Thus, she leaves at 3:20 PM on day 1 and reaches back at 10:35 AM on Day 3. Total time is clearly over the time taken by option (b).

Option (d): Train numbers 12443 and 12444.

This option can be easily removed as the total travel time on the train itself would be 18 hours 40 minutes + 17 hours 15 minutes = 35 hours 55 minutes. If you add the work time of 6 hours, it would become 41 hours 55 minutes, which is clearly more than option (b).

Option (e): AI 9810 and train 12444—Involves leaving Jamshedpur at 4 AM on the first day reaching the workplace at 11:15 AM on the same day, working till 5:15 PM the same day and reaching the railway station at 5:45 PM on the same day. However, train 12444 would have already left for the day and she would have to wait for the next day's train if she wants to come back by that train. Hence, she reaches home at 10:45 AM on Day 3. Clearly over 48 hours; does not beat option (b).

Hence, option (b) is the correct answer.

7. Looking at the options:

Option (e): It can be seen that taking the journey by IT 3348 and back by IT 3347 option involves leaving Jamshedpur at 4:20 PM on day 1, reaching Delhi at 10:35 PM and doing her work from 9 AM to 3 PM the next day. In this case, she would not be able to take the flight or the journey back. Thus, she has to catch IT 3347 on day 3. So, she leaves on day 1 at 4:20 PM and gets back on day 3 at 9:55 PM. Total time taken: 53 hours 35 minutes.

Option (a): Depart by train no. 12443 and return by train no. 12444—Leave home at 3:45 PM reach work destination at 11:10 AM next day, she would not have 6 hours to complete the work on the same day before 5 PM. Hence, she waits for the next day and catches train no. 12444 for her return journey at 5:20 PM on Day 3. She reaches back home at 10:45 AM on day 4. Total time: Clearly more than option (e)'s time. Hence, option (a) can be rejected.

Option (b): Depart by train no. 12801 and return by train no. 12802—

Leave home at 6:35 AM, reach work destination at 5:25 AM next day, she would start work at 9 AM, finish work at 3 PM. She catches train no. 12802 for the return journey at 10:20 PM on day 2 and reaches home at 8:15 PM on day 3. Total time: Over 60 hours.

Option (c): Depart by flight AI 9810 and return by flight AI 9809—Leave home at 4 AM on day 1; Reach the office at 11:15 AM the same day. She would have to do her work on the next day as she does not have 6 hours before 5 PM the same day. Hence, she will take AI 9809 on day 3 and reach home at 10:35 AM. Total time = 54 hours 35 minutes.

Option (d): Depart by flight AI 810 and return by flight AI 9809

Leave home at 11:25 AM and reach the same day. Do the work between 9 AM to 3 PM on day 2. Hence, she will take AI 9809 on day 3 and reach home at 10:35 AM. Total time = 47 hours 10 minutes.

Thus, option (d) is the correct answer.

8. If she cannot leave Jamshedpur before 16:00 hours on that day, it means that she really cannot get to New Delhi before 11:15 AM the next day (by taking the AI 9810). She can then complete her work on that day, from 11:15 AM to 5:15 PM. Then the earliest she can reach back would be if she takes AI 9809 flight at 5:50 AM and reaches home at 10:35 AM.

Thus, option (e) is the correct answer.

9. The in-between waiting period between reaching her office and returning would be given by (total time spent in Delhi – travel time to and from in Delhi – 6 hours of work time)

On comparing the 5 options, it can be seen that Option (d) is the best answer (Refer to the table below).

Option	Travel by	Reach office at	Finish work at	Reach airport/station at	Latest time she had to reach airport/station	Total waiting time
a	12801 – IT 3347	5:25 AM	11:25 AM	12:55 PM	4:10 PM	195 minutes
b	12443 – 12802	11:10 AM	5:10 PM	5:40 PM	10:15 PM	275 minutes

c	AI 9810 – 12802	11:15 AM	5:15 PM	5:45 PM	10:15 PM	270 minutes
d	AI 810 – AI 9809	6:40 PM	00:40 AM	2:10 AM	4:50 AM	160 minutes
e	IT 3348 – AI 809	10:35 PM	4:35 PM	6:05 AM	10 AM	235 minutes

10. In order to reschedule the ERP deadlines according to the order, Mr. Shiv should have discussed with the team of experts, i.e in this case the BAG members, and then come to a well thrashed out solution instead of unilaterally announcing a deadline and giving strict orders for the same. Thus option (e) is the best.
11. Although there were a number of reasons for the problems which are also mentioned in some of the options here [options1, 3], but the immediate cause was Mr. Shiv’s single-handed decision at the meeting and its strict follow up. Thus, option (e) is correct.
12. Resigning from the job, complaining to the boss or aligning the new members against the old would be childish actions. Here the best possible course of action would be to work out the routine and get additional help for the ad-hoc or extra jobs so that the core team is not burdened too much. Thus option (d) is the best answer.
13. In the passage all the options, namely 1, 3, 4 and 5 have been directly or indirectly mentioned or hinted at, the only option not mentioned in any way is the working problems faced by the new members of the team. Hence option (b) is the answer.
14. The best possible course of action would have been to follow her father’s way of working which was a proven success, which included discussing things with the BAG members and following a well thought out course of action. Hence option (a) is correct.
15. It can be inferred from this case that for implementation of an ERP package one requires a right mix of experienced problem solvers together with people who know about ERP and not just know about it, but are also upto date with it. Here option (d) and (e) come close but option (d) talks about inclusion of problem solvers and also mentions people abreast, i.e. upto date with ERP. This makes option (d) the correct answer and also superior to option (e).
16. The principal should look into why the teachers are unhappy and adequately compensate them for the extra efforts they are putting in. To be ruthless or to be too dogmatic would go against the bounds of being fair and just. Option (b) is the best action.
17. Mr. Zacharia as a well-wisher and experienced teacher would definitely look into the grievances of the teachers and offer them adequate compensation for the same. They could also discuss the problems and possible remedial measures. Exposing someone or being autocratic here would only spoil the situation. Hence option (b) is the best course of action.
18. Mr. Dev’s concerns are trustworthy and stable and his family’s concerns are older in age/maturity and experienced driver. All these are fully satisfied by Bal Singh. Option (c) is correct.
19. Dev’s most preferred candidate is Bal Singh and least preferred is Chethan as he is temporary and also sent by a competitor; thus option I is definitely correct. His family is concerned about age and Mani is the youngest, thus least preferred by the family. So option II does not match

the facts. As all the options except option (a) include II thus the correct option is (a).

20. As the GM is concerned about the senior members who did not like Ram he is most likely to reject Bal Singh as he is Ram's relative, is similar to him in his approach and has also been recommended by him. Option (c) is correct.
21. Although options 1, 2, 3 and 4 may or may not be true, the 5th option is most likely implied in this case as it is a clear implication of the new policy being suggested by the new GM. The work would definitely increase as 2 new parameters are added. Thus option (e) is definitely correct.
22. As Saral Co. has a policy of discussing everything with its employees before its implementation, an immediate ratification of a new order would not be possible unless enough time was given for deliberation and discussion by the members. Hence option (e) is correct.
23. The definition of ethics is defined as "An individual's code for society's survival." Naresh's definition of his society is his family, himself, his employees and their family members. Remember that 'ethical' and 'moral' are different. Someone can be immoral but at the same time be ethical towards his society.

In such a case, in his mind he is being ethical. But actually your society cannot be defined by you according to your conveniences. Thus, he cannot be called totally ethical. At the same time he cannot be called totally unethical as he is working in the best interest of his smaller society. Hence the best option is Option (b).

24. In this case too, Naresh is working on the best interests of his narrowly defined society. However, he has defined society not to include the larger society. Thus, Naresh can be called largely ethical, but for Srikumar we cannot conclude anything as we do not know the definition of his society.

Hence, option (d) is the correct answer.

25. Clearly Srikumar is being immoral, as he not only kept silent but also forced Naresh not to speak. At the same time Naresh is being ethical as he is taking care of his society's interests. Option (a) is correct.

Answer Questions 1 and 2 on the basis of the paragraph below.

We are not only afraid of being in the dark; we are also suspicious of being kept in the dark. We often feel that the universe has a hidden order that we cannot quite comprehend. In ancient times, this order was attributed to the gods—omnipotent beings who controlled humans' fates. Greek myths in particular portrayed humans as pawns in the great games played by the gods. More recently, there are suspicions of global conspiracies. These conspiracies are cited for events that are too important to be random. We no longer describe them as 'Acts of God', so they must be the work of other people—people who are hiding their influence over us, covering up their involvement. They are keeping the rest of us in the dark. Among the events attributed to these people are political assassinations and UFO sightings. Examining these events in minute detail results in a long list of 'coincidences' which, in the minds of the conspiracy buffs, are too numerous to be truly random. There must be a central planner who is at the hub of a sinister form of order. No one admits to the conspiracy, so there must be a cover-up. Better to think that we are all being kept in the dark by sinister forces than to admit that there is no order.

1. Which of the following statements, if true, would weaken the underlying logic of the above passage? (2 marks)
 - I. The human need for order is a highly exaggerated notion. It more often than not leads to creation of theories about the universe. The more sensational the theory, the more prevalent it becomes.
 - II. The universe is less guided by pure randomness than by well-defined natural processes which are subjected to randomness at varying intervals of time and space.
 - III. To strengthen their case for a variety of conspiracies, the conspiracy buffs are extrapolating from a very small set of observed 'coincidences'
 - IV. The persons propounding the different conspiracy theories are usually novelists who use these theories as a backdrop during the construction of the plots of the novels.
 - V. The human fear of being kept in the dark is much stronger than the fear of lack of order in

the working of the universe.

- (a) I, II, and III
- (b) I, II and IV
- (c) I, III and IV
- (d) I, IV and V
- (e) II, IV and V

2. Which of the following statements would, if true, strengthen the case for belief in sinister forces and conspiracies being at work in the above paragraph? (3 marks)

- I. Though science has progressed a lot in the last two centuries or so, it is still unable to explain/account for more than 80% of the phenomena in the universe.
- II. There is now the existence of photographic evidence of presence of UFOs and a growing number of parallel studies showing that the human mind can easily be manipulated to do someone else's will through various events that manipulate the 'perceived reality'.
- III. The fear of our actions and thoughts being controlled by someone else has intensified with the widespread popularity of the depiction of its gory outcomes by different novelists and movie makers.
- IV. There is a strong movement to reintroduce the teachings of the biblical evolutionary process and the presence of God in schools around the world.
- V. The Darwinian study of evolution of species, the cornerstone of beliefs in fathomable randomness of the workings of the universe has come under a scathing attack for its inaccurate depiction of the causes and process of evolution.

- (a) I and IV
- (b) I and V
- (c) II, III and V
- (d) I, II and V
- (e) II, III, and IV

3. Impressions are direct, vivid, and forceful products of immediate experience; ideas are merely feeble copies of these original impressions.

Assuming the above statement is true, which of the statements logically follow from it? (3 marks)

- I. Every impression leads to an idea.
- II. Ideas must follow an antecedent impression.
- III. The colour of the 2011 XAT test booklet right in front of a candidate is an impression to her, whereas the memory of the colour of her television set is an idea.
- IV. If one was interested in origin of the idea of the colour of a television set, then one needs to understand the impressions from which this idea was derived.

- (a) I & III
- (b) II & III
- (c) II & IV

(d) II, III & IV

(e) I, II, III & IV

4. Media are not just passive channels of information. Not only do they supply the stuff of thought, but they also shape the process of thought. And what the internet seems to be doing is chipping away our capacity for concentration.

Which of the following, if true, would most strengthen the argument presented above? (1 mark)

- (a) Nietzsche was forced to use a typewriter when he started losing his vision. After he mastered the machine, he could type with his eyes closed. It was later found that under the effect of the machine, Nietzsche's prose "changed from arguments to aphorisms, from thoughts to puns, from rhetoric to telegram style".
- (b) One of the effects of the timekeeping instruments has been that we have started deciding on our daily activities based on the clock and not based on our senses.
- (c) Studies have shown that the essay writing skills of an average 15–20 year old, who spends a lot of time browsing the internet, is comparable to what it was among the average 15–20 year olds, throughout the 1980s and the 1990s.
- (d) A recent study has shown that the number of people who fall asleep while reading a printed book has increased in the last five years.
- (e) The ability of the younger judges, who have grown up with ready access to internet, to judge complex and intricate cases, has, on an average, become better as compared to what it was for judges of comparable age profile during the 1920s.

5. Which of the following, if true, would most weaken the argument presented in the previous question? (1 mark)

- (a) Nietzsche was forced to use a typewriter when he started losing his vision. After he mastered the machine, he could type with his eyes closed. It was later found that under the effect of the machine, Nietzsche's prose "changed from arguments to aphorisms, from thoughts to puns, from rhetoric to telegram style".
- (b) One of the effects of the timekeeping instruments has been that we have started deciding on our daily activities based on the clock and not based on our senses.
- (c) Studies have shown that the essay writing skills of an average 15–20 year old, who spends a lot of time browsing the internet, is comparable to what it was among the average 15–20 year olds, throughout the 1980s and the 1990s.
- (d) A recent study has shown that the number of people who fall asleep while reading a printed book has increased in the last five years.
- (e) The ability of the younger judges, who have grown up with ready access to internet, to judge complex and intricate cases, has, on an average, become better as compared to what it was during the 1920s.

6. Randomness has to be dealt with successfully to ensure a better control over one's life. Before one can deal effectively with randomness, one must acknowledge its existence.

The above statement implies the following *except*: (3 marks)

- (a) Randomness can be dealt with effectively.
 - (b) If one acknowledges the existence of randomness, one will be able to deal with it effectively.
 - (c) One can deal effectively with randomness if and only if one acknowledges its existence.
 - (d) Everyone lives in a random world.
 - (e) If one does not acknowledge the existence of randomness, one cannot deal with it effectively.
7. Perhaps this war will pass like the others which divided us, leaving us dead, killing us along with the killers but the shame of this time puts its burning fingers to our faces.

Who will erase the ruthlessness hidden in innocent blood?

Which of the following is certainly not implied in the above verse? (1 *mark*)

- (a) Killers also get killed in war.
 - (b) Humanity gets divided by war and reunites afterwards in peace.
 - (c) This war is especially ruthless.
 - (d) This war is shameful to the entire humanity.
 - (e) None can obliterate the ruthlessness of this war.
8. As the information on air warfare tasks and stressors was being gathered and scenarios were being developed, a parallel effort ensued to identify a test bed simulation for air warfare teams. To maintain experimental control, it was determined by the designers that choosing a low physical fidelity simulation was acceptable as long as cognitive fidelity in a team simulation was maintained by subjecting soldiers to pressure situations in a simulated combat setting and attempting to ensure that naturalistic decision-making of soldiers would not be compromised.

Which of the following statements, if true, weakens the logic of the above passage? (2 *marks*)

- I. A number of studies have shown that high levels of physical stress lead to a weakening of the decision-making capabilities of human beings.
 - II. It has been convincingly demonstrated by various studies that human beings by nature are not designed to adapt to high levels of mental stress.
 - III. Numerous studies have shown that simulated environments can be designed to be good substitutes for real-life combat situations.
 - IV. Studies have shown that simulated exercises for armed forces personnel tend to induce a systematic type of 'correct' and common behaviour among the trainees.
 - V. Officers, when short-listing soldiers for critical operations, pick up battle-hardened soldiers rather than those who have been trained through simulations.
- (a) I and II
 - (b) II and III
 - (c) I and IV
 - (d) I, II, IV, and V
 - (e) II, III, IV, and V

9. The motivation of human beings towards their work is a subject matter that is at once a simple as well as an extremely complicated matter. For a long time, economists, sociologists, as well as psychologists believed that a carrot and stick approach, with monetary incentives playing the role of the carrot, would be sufficient to goad employees towards achieving higher levels of performance. However, a number of recent studies and observations, especially dealing with the open source revolution are placing on the table strong evidence suggesting that monetary incentives are only one part of the entire story of motivation through incentives. In a study conducted by a group of researchers at MIT, it was found that monetary incentives work well only in respect of tasks requiring mechanical skills, i.e. those tasks not requiring much use of higher level cognitive abilities (such as memorising or problem solving). In fact their study showed that setting high monetary incentives for tasks requiring cognitive abilities were more likely than not to produce adverse outcomes. Since this result flew straight in the face of the widely accepted body of knowledge on employee motivation, they conducted multiple experiments in different settings and countries to ensure that it was not a one-off result. The findings were the same in all repetitions of the experiment. These studies appear to suggest that monetary incentives need to be provided only to such an extent as to take the minds of employees off the issue of money and focus on other issues that are necessary to get the job done right. For instance, some experiments have shown that greater autonomy to employees and lowered interference from management (and bosses) is successful in driving the performance of employees working in cognitive skill intensive jobs.

Identify the statement(s) that is (are) logically consistent with the content of the paragraph. (2 marks)

- I. The carrot-stick approach essentially requires the use of rewards to get more of a desired behaviour whereas penalties lead to increased undesirable behaviour.
 - II. Expending time and effort on the design of monetary incentives is a wasteful exercise.
 - III. The study by the group of MIT researchers was a flawed exercise from the start.
 - IV. There appears to be a need to reorient the existing paradigm prevalent in incentive design.
 - V. During the process of designing incentives, one should clearly delineate activities into those requiring mechanical skills and those requiring higher-level cognitive skills and design with separate sets of incentives and penalties for each.
- (a) I and IV
 - (b) I and V
 - (c) II and III
 - (d) II and IV
 - (e) IV and V

Answer Questions 10 and 11 on the basis of the following conversation between two friends, Paradox (P) and Herodox (H).

P: The human body is but the tomb of the soul and the visible world of matter is appearance that must be overcome if we are to know reality. The former is an integral part of 'being', that which can neither come into existence nor cease to exist for it always is. 'Being' is unmoved and undistributed.

Motion and disturbance belong to the realm of ‘becoming’, the changing world of unreality rather than of ‘being’ in which true reality resides. Further, motion & change by belonging to the realm of ‘becoming’ by having no separate existence of their own are logically inconsistent with reality and hence, unworthy of serious study.

H: All things are in a state of perpetual flux. Permanence, and by extension, the concept of ‘being’ is only an illusion. This change and continual transformation, through an often disorderly process of conflict and survival of the fittest, is the underlying principle at work in the universe. It is from this principle that all things come into existence, and forms the basis for the morals and governance patterns that attempt to preserve the social thread of societies. By extension, the study of human activity through the lens of an idealised state of ‘being’ and as a basis for formulating moral codes of conduct is inappropriate at best.

10. Which of the following statements could be considered as logically consistent with the views of paradox in the above paragraphs? (3 marks)
- I. A fly travelling on a flying arrow perceives it to be at rest. Therefore the flying arrow belongs to the realm of being.
 - II. The activities of the day to day life are concerned with the unreal part of human existence and hence, should not be subject to moral standards.
 - III. Maintaining a balance among the various constituents of society is essential to the well-being and the continuing existence of the soul.
 - IV. Conflicts and the coming of spontaneous order do not have any underlying causes that are relevant for study as the notion of perpetual flux itself is erroneous.
 - V. The real is and cannot be non-existent. Further, reality is one and unique.
- (a) I only
 - (b) II and IV
 - (c) IV and V
 - (d) I, II, and III
 - (e) I, IV, and V
11. Which of the following statements best represents an implication of Herodotus’s ideas? (2 marks)
- (a) Religion and other approaches that stress on maintaining and developing the purity of the human soul are subjects that do not merit serious attention.
 - (b) The setting of moral standards and codes of governance have to be more procedure-oriented with a focus on the way humans conduct themselves in their interactions with each other.
 - (c) Maintaining a balance between various constituents of the society and conflict prevention is essential to the maintenance of social order and a pre-requisite for governance.
 - (d) As the real world relevant to the existence of human beings is in a state of perpetual flux, attempting to study the same in a systematic manner would be meaningful despite reality itself having changed by then.
 - (e) There is no notion of time-space-invariant reality. There can be numerous realities both

across times and across human cultures and civilisations.

Answer Questions 12 to 14 on the basis of the information below.

Five reviews of the recently published novel, *Caught in a Blizzard*, are reproduced below. The reviews and the reviewers are identified as indicated by the alphabets.

- (a) This novel can change your life—for the good, as it has changed mine. It has made me reflect critically about my life.
- (b) The novel has become a popular piece of literature, more among the youth than among the older population.
- (c) The author uses the plot in her novel to present her philosophy about life in a positive light, rather than relying on the merits of the philosophy *per se*.
- (d) The author is known to be a writer of great power. The intricate and captivating plots in her novels show that she has a subtle and ingenious mind.
- (e) People have been jolted out of their beliefs about love and other different aspects of life after reading this novel.

The options to the questions 12-14 are same as the reviews/reviewers indicated above.

- 12. There has been criticism about reviewers that they write reviews after having a cursory reading of the book in question. Based on the analysis of the different reviews, which reviewer is most likely to have read the book in greater detail as compared to the other reviewers? (1 mark)
- 13. Out the five reviews given, which one can be most objectively validated? (1 mark)
- 14. Which reviewer eulogises the author rather than critically reviews the novels? (1 mark)
- 15. Indian government may hold top executives responsible if state-run power companies fail to meet performance targets and punish them with fines and transfers. The strict performance parameters are aimed at ensuring that at least the reduced target for 62,000 MW of generation capacity addition is achieved before the end of the 11th Plan, said a power ministry official. The performance of chairman and managing directors of the power Public Sector Units (PSUs) in project implementation will be assessed as per the terms and conditions stipulated in the company's memorandum of understanding (MoU) with the power ministry, he said, requesting anonymity. Performance parameters of executives had come under strict scrutiny due to a lack of progress in capacity addition program. While the target for the 11th five year plan has already been scaled down by the government from 78,500 MW, in the first three years of the plan yielded only 22,302 MW of fresh capacity.

If you were the chairman of one of these power PSU's, which of the following statements (all of which are assumed to be true) could best be used in order to strengthen your case against the government holding top executives responsible? (3 marks)

- I. The labour unions, owing allegiance to the ruling party at the Center, are not allowing work to progress with their demands for wage hikes that are untenable.
- II. The actions of the mid-level management are not in line with the objectives laid down by the top management.
- III. The delays have been due to difficulties in obtaining funds at reasonable interest rates on

account of the recessionary conditions.

- IV. We are not to blame. The government is not doing enough to ensure availability of sufficient fuel to power the existing plants, let alone the new plants.
 - V. The government had ignored the infrastructure availability like roads etc., and environmental clearances required for such projects and therefore set an unrealistic target to begin with, and the revised target is also unrealistic as well.
- (a) I and II (b) I and III
(c) I, III and IV (d) II, IV and V
(e) I, II, III, IV and V

Answer Questions 16 and 17 on the basis of the paragraph below

The CEO of ABC Telecom Ltd. (ABC) is in a quandary since he received the telephone call in the morning from his counterpart at LMN Telecom Ltd. (LMN). Both companies were engaged in a bitter experience a couple of years ago when they had attempted to merge with the intention of creating a behemoth telecom company, possibly the largest in the world. The merger had fallen through due to the opportunistic behaviour on the part of Mr. Das, then CEO of LMN. During the time the merger talks were taking place, Mr. Das had also approached a few other suitors for LMN in an attempt to force ABC to pay a higher price. Further, there were reports of attempts by management of LMN to scuttle the deal. Back then, ABC had also faced stiff opposition to the deal from one of its large shareholders.

Since then, a lot has changed for both companies. The bleak economic conditions due to recession had led to a drastic fall in the market value of both companies, with ABC comparatively losing much more in terms of market value. Raising money has become more difficult for both companies, especially for LMN. On the brighter side for ABC, the opposing shareholder had recently sold off his stake to another investor who earlier had supported the original merger deal with LMN a couple of years ago.

16. Which of the following would be the most appropriate line(s) of thought for the CEO of ABC to adopt in response to the offer by LMN?(3 marks)

- I. Once bitten twice shy. There is simply no way I can think of resuming talks with LMN after their unethical behaviour the previous time around. I would rather spend my time on merger discussions with other companies.
- II. The deal may make less business sense this time around. However, if it goes through, I will become the CEO of the world's largest telecom company. So let us try our luck once more.
- III. I will resume talks only if they provide guarantees as to the reimbursement of our expenses incurred, in the event of the deal not materialising.
- IV. Let me not be biased against dealing with LMN, if we

can secure the deal at a reasonably low price, benefiting our shareholders, let us go ahead with it.

V.

I am not sure if we can raise the money now. In any event, they are the ones facing greater financial problems. So let's not hurry now. We might have an opportunity to buy them out at a cheaper price later.

(a) I and III

(b) II and IV

(c) II and III

(d) I and IV

(e) IV and V

17. The merger of ABC and LMN has been confirmed after detailed negotiation with LMT holding the majority share of the resultant entity. LMN has financed the merger by taking debt at higher-than-market interest rates from its bankers, in the hope that it would be able to streamline operations and reduce costs in the resultant entity which will allow it to repay the loan. If you were an investor looking to invest in telecom companies, which of the following could be the strongest reasons for staying away from investing in the resultant entity? (3 marks)

- (a) The new entrants in the telecom market were coming with better offers for the customers.
- (b) The market would be as competitive as ever for the resultant entity, thus providing no guarantee for success.
- (c) The combined management did not present any grand strategies to the investors.
- (d) ABC's management was giving in to Mr. Das who was a known opportunist.
- (e) LMN was using high cost debt to purchase another company in the same industry facing similar problems with no visible advantage for the combined entity over competitors.

18. Wind turbine maker Leone Energy posted a net loss of ` 250 crore for the fourth quarter ended March 31, 2010 as against a net profit of ` 350 crore in the same quarter a year ago. In the financial year 2009–10, the company clocked a gross income of ` 6,517 crore, as against ` 9,778 crore in the previous year. Leone Energy clocked a loss of ` 1,100 crore in 2009–10, as against a net profit of ` 320 crore in 2008–09. The sales revenues stood at ` 22,400 crore for the year, approximately 21 per cent less against ` 28,350 crore last year. For the financial year ending March 31, 2010, Leone Energy's sales volume (in terms of capacity of projects executed) was 4,560 MW from 2,935 MW a year ago. The CEO of Leone Energy in his message to shareholders suggested that the poor performance of the company was the result of adverse economic conditions during the year ended March 31, 2010.

You are a shareholder owning 5% of the shares of Leone Energy, have seen the stock price decline by more than 50% during the year 2009–10, and are quite upset with the way the management has been handling the business. You have decided to confront the management at the next shareholders' meeting and have chosen the following 5 points to argue against the

CEO's version of the story. In light of the above paragraph, select the most appropriate order of these 5 statements that you, as a disappointed shareholder, should adopt as a stinging and robust preface in your case against the management in front of the management and other shareholders. (3 marks)

- I. The management is not doing its best to maintain the profitability of the company.
- II. The company has actually increased its sales volume during the year under consideration.
- III. The adverse economic conditions have led to a worldwide increase in the adoption of alternative energy sources, reflecting in all-time highest profits for wind turbine makers in both developed and developing countries.
- IV. The management has been lax with its employees as the management enjoys a large set of benefits from the company that they would have to forgo if they became strict with employees.
- V. The company is trying to increase sales by charging lower, unprofitable prices.

(a) II, III, I

(b) I, III, II

(b) II, V, III

(c) III, II, V

(e) V, II, III

19. On 1st March, Timon arrived in a new city and was looking for a place to stay. He met a landlady who offered to rent her apartment at a reasonable price but wanted him to pay the rent on a daily basis. Timon had a silver bar of 31 inches, and an inch of the silver bar was exactly equal to a day's rent. He agreed to pay an inch of the silver bar towards the daily rent. Timon wanted to make minimum number of pieces of the silver bar but did not want to pay any advance rent. How many pieces did he make?(3 marks)

(a) 5

(b) 8

(c) 16

(d) 20

(e) 31

Read the following case and choose the best alternative (Questions 20–23):

Chetan Textile Mills (CTM) has initiated various employee welfare schemes for its employees since the day the mill began its operations. Due to its various welfare initiatives and socially responsible business practices, the organisation has developed an impeccable reputation. Majority of the regular workers in CTM had membership of *Chetan Mills Mazdoor Sangh* (CMMS), a non-political trade union. CMMS had the welfare of its members as its guiding principle. Both CTM and CMM addressed various worker related issues on a proactive basis. As a result no industrial dispute had been reported from the organisation in the recent past.

These days majority of the employers deploy large number of contract labourers in their production processes. In an open economy survival of an organisation depends on its competitiveness. In order to become competitive, an organisation must be able to reduce cost and have flexibility in employment of resources. Engaging workers through contractors (contract labourer) reduces the overall labour cost by almost 50%. Indian labour legislations make reduction of regular workers almost impossible, but organisations can overcome this limitation by employing contract labourers. Contract labourers neither get the same benefit as regular employees nor do they have any job security. According to various recent surveys, government owned public sector units and other departments are the biggest employers of contract labourers in the country. Contractors, as middle-men, often exploit the contract labourers, and these government organisations have failed to stop the exploitation.

Over time CTM started engaging a large number of contract labourers. At present, more than 35% of CTM's workers (total 5,000 in number) are contract labourers. CMMS leadership was wary about the slow erosion of its support base as regular workers slowly got replaced by contract workers and feared the day when regular workers would become a minority in the mill. So far, CMMS has refused to take contract labourers as members.

Recently, based on rumours, CTM management started to investigate the alleged exploitation of contract labourers by certain contractors. Some contractors felt that such investigations may expose them and reduce their profit margin. They instigated contract labourers to demand for better wages. Some of the contract labourers engaged in material handling and cleaning work started provoking CTM management by adopting violent tactics.

Today's newspaper reports that police and CTM security guards fired two or three rounds in air to quell the mob. The trouble started while a security guard allegedly slapped one of the contract labourers following a heated argument. Angry labourers set fire to several vehicles parked inside the premises, and to police jeeps.

20. In the wake of recent happenings, what decision is expected from the CTM management? From the combinations given below, choose the best sequence of action. (4 marks)

- I. Stop the current investigation against the contractors to ensure industrial peace; after all allegations were based on rumours.
- II. Continue investigation to expose exploitation and take strong actions against trouble makers.
- III. Get in direct touch with all contract labourers through all possible means, communicate the need for current investigation to stop their exploitation, and convince them regarding CTM's situation due to competition. Also expose those contractors who are creating problems.
- IV. Promise strong action against the security guards who are guilty.
- V. Increase the wages of contract labourers.

- (a) I, V
- (b) I, II
- (c) II, V
- (d) III, IV
- (e) III, V

21. In the current context, which among the following represent the most suitable reaction from the CMMS leadership? (5 marks)

- (a) Distance CMMS from the episode and explain that CMMS is not involved in the fiasco through a press conference.
- (b) Offer membership to contract labourers, which would put the contract worker at par with the regular workers in CMMS.
- (c) Do not offer membership to contract labourers, but represent their interests during negotiation in order to prevent the formation of another union in CTM.
- (d) Start another union exclusively for contract labourers of CTM.
- (e) Adopt a neutral stand in public, and pass on information related to problem creators to the CTM management.
22. Out of the options given below, which one would be the best policy decision by the government at the national level? (2 marks)
- (a) Asking the CTM management to pay same wages to both regular and contract workers.
- (b) Income tax raids in offices of contractors under investigation.
- (c) Setting up a new labour welfare office within CTM premises.
- (d) Setting up a new committee to make recommendations for changes in labour legislations with an objective to reduce exploitation of contract labourers.
- (e) Use entire government machinery to support CTM, which has an impeccable track record.
23. The criminals in the surrounding area often took their cue from the situation in the mill, creating law and order problems outside the mill which would later make it difficult for workers to come to the mill safely. Given the circumstances, identify the stakeholder that should be the immediate priority of the CTM management. (1 mark)
- (a) Contract labourers who were allegedly beaten by the security guard of the company.
- (b) District administration that is concerned about the spread of violence.
- (c) CMMS that prefers an immediate settlement of the issue.
- (d) Customers who are concerned about prices and regular supplies.
- (e) Contract labourers who are demanding job security and same wages as regular employees.

Answer question numbers 24–26 based on the following information.

Alex Company has its office at the third floor of a multi-storied building in Mumbai. There are 5 rooms to be allotted to 5 managers (designated M1 to M5), each of whom will occupy one room. Each room has its own advantages and disadvantages. Some have the sea view, while others are closer to either the lift or the dining room, while some are more spacious. Each of the five managers was asked to rank the room preferences amongst the rooms 301, 302, 303, 304 and 305. Their preferences were recorded as follows:

Preference	M1	M2	M3	M4	M5
1st	302	302	303	302	301
2nd	303	304	301	305	302

3rd	304	305	304	304	305
4th		301	305	303	
5th			302		

Some managers did not indicate any preference for some rooms, as they did want to be there under any condition. The company decided to allot rooms to managers in such a way that the managers get rooms as per their best preference or close to that.

24. How many managers would get the rooms as per their best preference? (2 marks)

(a) 1

(b) 2

(c) 3

(d) 4

(e) 5
25. If manager X gets his/her 1st choice, then his/her preference ranking is 1 and so on. Management decided to allot rooms so that *the sum of the preference ranking of all the managers is minimised*. What is the total preference ranking for the rooms allotted to all the managers? (3 marks)

(a) 5

(b) 6

(c) 7

(d) 8

(e) 9
26. Suppose that Manager M2 decides not to join the new zonal office and Manager M6 takes his place. Manager M6 has the following preference ranking in decreasing order: 301, 302, 303, 304. In this case what would be the sum of the preference ranking allotted to all five managers? (2 marks)

(a) 5

(b) 6

(c) 7

(d) 8

(e) 9

Answer question numbers 27 and 28 based on the following information:

Every Saturday, the members of Raja Harish Chandra Club meet in the evening. All the members of the club are honest and never lie. Last Saturday, the following conversation was heard at one of the tables with five members sitting around it.

- Satya Sadhan: In this club not all members are friends with each other.

Satyabrata: None of the pair of friends in this club has any common friend.

Satyajit: Every pair of members who are not friends has exactly two common friends in this club.

Satya Pramod: There are fewer than 22 people in this club.

27. How many members are there in the club? (5 marks)

(a) 5

(b) 7

(c) 15

(e) 16

(e) 20

28. How many friends does Satya Sadhan have in the club? (3 marks)

(a) 2

(b) 3

(b) 5

(d) 7

(e) 8

Answer question numbers 29–32 based on the following information:

In the country of *Gagan*, air travellers can buy their tickets either directly from the airlines or from three websites that are licensed to offer ticketing services online. In *Gagan* most of the commercial transactions are done electronically, and all citizens have an account with its national bank CeeCee. As a result the three websites have become popular and each transaction through these websites carries a surcharge of Gs. 250 (Gs. refers to Guppes, currency of Gagan). Given below are four post-new-year (January 2, 2011 to February 28, 2011) offers from three competing websites:

Cozy_travel Offer: Make a confirmed booking for any service (flight ticket, hotel or rail tickets) through Cozy_travel.com from December 5, 2010 to February 8, 2011 and become eligible for two free air tickets (offer is limited to the base fare). Free tickets have to be booked through online request from January 1, 2011 to February 28, 2011. The request for free tickets should be submitted at least twenty-one days in advance. Free tickets are non-amendable (except the passenger name) and cannot be cancelled. Free ticket cannot be exchanged for cash or kind with anybody. Cozy_travel will try its best to secure the free ticket as per the request. However, ticket confirmation is subject to airline schedule and seat availability in airlines selected and finalised by Cozy_travel from specific available airlines.

Cool_yatra Offer: Book any air ticket of any airline on Cool_yatra.com on or after December 21, 2010 and get your next ticket free. Under this offer, only the base fare of free ticket will be refunded by Cool_Yatra.com. The customer will have to bear the rest of the charges (other fees and surcharges). The value of the base fare will be refunded to passenger on/after March 1 or fifteen days after completion of travel on the free ticket (whichever is later). The free ticket can be booked only on Gagan Air flights. The free ticket must be booked within fifteen days of booking the original ticket and the travel date of free ticket must be fifteen days after the booking date of free ticket. There must be a seven day gap between the travel date of main/original ticket and the free ticket. The travel date of free ticket should be on or before February 28, 2011. The free ticket cannot be transferred. On cancellation of the original ticket(s), you no longer remain eligible for the free ticket(s).

Easy_travel Cash Back Offer: Easy travel offers 25% cash back on all air ticket bookings between December 5, 2010 and February 28, 2011 using CeeCee net banking service or its debit/credit card. The cash back amount will be credited back to customers account within twenty-one days from making the transaction. Maximum cash back during the period is Gs. 400 per person per ticket and total amount that can be claimed by the customer is Gs. 2,400

Ek Ke Sath Ek Offer from Easy_travel Book an Air Spice ticket with Easy_travel using any credit/debit card, and get another ticket absolutely free. The free tickets will be issued on Air Spice on its entire network. The offer is valid for sale from January 11, 2011 to January 31, 2011. The free ticket must be booked at least fifteen days prior to the date of travel and need to be completed within the offer period. The promotion code for the free ticket will get activated only seven days after

booking the main ticket. Easy_travel will charge a handling fee of Gs. 1000/- per person for any amendments made on the main ticket. Cancellations of tickets purchased under this offer are not permitted. The free ticket obtained under this offer cannot be exchanged for cash and cannot be re-routed.

29. Which offer has got the maximum chance for becoming the most popular among the air travellers of Gagan during the post new-year period? Among the following options, choose the best offer-explanation combination. (3 marks)
- (a) Cozy_travel, because the customers will get twice the number of flights and offer is applicable for all services provided by Cozy_travel.
 - (b) Cozy_travel, because it allows any customer to transfer the free ticket to any one if they are not interested in using it.
 - (c) Ek ke sath ek offer from Easy_travel, because it offers absolutely free tickets to all customers.
 - (d) Cash Back offer from Easy_travel, because all other offers are restricted either in terms of airlines to choose or the period of offer.
 - (e) Cozy_travel, because it allows customers to use free tickets even after post new-year period.
30. Suppose the offer from Cool_yatra became the most popular, and the other two agencies seek help from business consultants to make their offers more attractive. Identify the best recommendation among the following. (3 marks)
- (a) Recommendation for the Ek Ke Sath Ek Offer of Easy_travel: Negotiate with Gaga Air to come up with an offer that provides one free ticket for every main ticket booked in Air Spice.
 - (b) Recommendation for the Cash Back Offer of Easy_travel: Ensure that cash back amount will be credited back to the customer's account within fifteen days.
 - (c) Recommendation for the offer from Cozy_travel: Reduce the number of free tickets to one and applicable only for air ticket booking (not for other service), but allow customers to book their free ticket from Cozy_travel.com in Gaga Air or comparable airlines without any date restrictions.
 - (d) Recommendation for the Ek Ke Sath Ek Offer of Easy_travel: Negotiate with Gaga Air to come up with an offer that provides one free ticket for every main ticket booked in Gaga Air and run both offers simultaneously.
 - (e) Recommendation for the offer from Cozy_travel: Do not allow customers to transfer tickets to others, but disclose that Cozy_travel will consider both Gaga Air and Air Spice flights that connect all cities in Gagan for issuing free tickets.
31. Jagan is appearing for MAAT exam on January 2, 2011, in a city which is not his home town and he is yet to book the air ticket to reach his hometown from MAAT center. Based on his MAAT performance, he is confident about getting an interview call from the institute of his choice located in Akashpur. All institutes associated with MAAT will contact the short-listed candidates within the next two weeks with the venue details and date of interview. Interviews will be scheduled within fifteen days from the date of announcement of shortlist, and will be

held at the respective institutes. Jagan's hometown, MAAT centre, and Akashpur are connected by all airlines and the base fares start at Gs. 1,000. While visiting Akashpur for the interview, Jagan will have to put up in a hotel. The minimum charge for booking a hotel in Akashpur through Cozy_travel is Gs. 2,400. Equally good hotels which are not listed in the Cozy_travel website charge Gs. 1,000. All the three travel websites assure a minimum of one free air ticket for every booking. If Jagan has no other reason to fly, which of the following offers should Jagan go for? (3 marks)

- (a) Ek Ke Sath Ek Offer of Easy_travel.
- (b) Get the flight ticket and hotel booking from Cozy_travel. He should use confirmed free ticket for return journey and exchange extra ticket (if any) on barter basis.
- (c) Get the flight ticket through Cozy_travel, and use the second ticket if available for the return journey.
- (d) Get the flight ticket from Cool_yatra.
- (e) Get the flight ticket and hotel booking through Cozy_travel, and use the free tickets for return journey.

32. Janaki needs to reach Khilli on January 28 to visit her uncle, and will return after fifteen days. Janaki found that the minimum fare for both the to and fro journeys is Gs. 5,000 which includes Gs. 1,200 base fare. If all airlines connect Janaki's city to Khilli, and all three offers (except the Cash Back Offer) ensure minimum of one free air ticket, which of the following should Janaki opt for? (3 marks)

- (a) Ek Ke Sath Ek Offer of Easy_travel
- (b) Cash Back Offer of Easy_travel
- (c) The Cozy_travel offer
- (d) The Cool_yatra offer
- (e) Buy air tickets directly from airline websites

Answer question numbers 33–35 based on the following information:

On a certain day six passengers from Chennai, Bengaluru, Kochi, Kolkata, Mumbai and Hyderabad boarded the New Delhi bound Rajdhani Express from Tata Nagar. The following facts are known about these six passengers:

- The persons from Kochi and Chennai are less than 36 years of age.
- Person Z, the youngest among all is a doctor.
- The oldest person is from Kolkata and his/her profession is same as that of the person who got down at Mughal Sarai.
- The persons from Bengaluru, Chennai, Hyderabad and Mumbai got down at four different stations. The eldest among these four got down at Koderma and the youngest at Kanpur. The person who got down at New Delhi is older than the person who got down at Mughal Sarai.
- The engineer from Bengaluru is older than the engineer from Chennai.
- While arranging the teachers in increasing order of age it was observed that the middle person is as old as the engineer from Chennai.

- Person Y who got down at Mughal Sarai is less than 34 year old.
 - The teacher from Kochi is four years older than the 31 year old doctor who is not from Mumbai.
 - In the past, three of the travellers have served in the Indian Army.
33. Which of the following options is true? (2 marks)
- (a) The person from Chennai is older than the person from Kochi.
 - (b) The oldest teacher is from Mumbai.
 - (c) The person from Mumbai is older than at least one of the engineers.
 - (d) The person from Kochi got down at Mughal Sarai, and was an engineer.
 - (e) The person who got down at New Delhi is older than Y, who in turn is older than the person from Hyderabad.
34. All six travellers are working in the same organisation for at least one year. The organisation recruits two categories of employees—fresh graduates and those who have at least five years of experience in the Indian Army. In both cases a new recruit should be less than 30 years of age. Among the travellers from the same profession, those with military background are at least five years older than the travellers who joined as fresh graduates. Identify the travellers who joined the organisation as fresh graduate(s). (2 marks)
- (a) Only Y.
 - (b) The person Y and the traveller from Chennai.
 - (c) The person Y and the travellers from Kochi and Hyderabad.
 - (d) The travellers from Kochi and Hyderabad.
 - (e) The teacher from Mumbai, the traveller from Kochi and the younger engineer.
35. If W is neither the youngest nor the oldest among the travellers from her profession, which of the following is true about her? (2 marks)
- (a) She got down at Koderma.
 - (b) She is 36 years old.
 - (c) She got down at Mughal Sarai.
 - (d) She is from Kochi.
 - (e) None of the above

Answer Questions 36–38 based on the following information:

Mrs. Sharma has a house which she wants to convert to a hostel and rent it out to students of a nearby women's college. The house is a two storey building and each floor has eight rooms. When one looks from the outside, three rooms are found facing North, three found facing East, three found facing West and three found facing South. Expecting a certain number of students, Mrs. Sharma wanted to follow certain rules while giving the sixteen rooms on rent:

All sixteen rooms must be occupied.

No room can be occupied by more than three students.

The Six rooms facing the north are called the north wing. Similarly, six rooms facing east, west and south are called as east wing, west wing and south wing respectively. Each corner room would be in

more than one wing respectively. Each of the wings must have exactly 11 students. The first floor must have twice as many students as the ground floor.

However Mrs. Sharma found that three fewer students have come to rent the rooms. Still Mrs. Sharma could manage to allocate the rooms according to the rules.

36. How many students turned up for renting the rooms? (3 marks)

- (a) 24
- (b) 27
- (c) 30
- (d) 33
- (e) None of these

37. If Mrs. Sharma allocates the north-west corner room on the ground floor to 2 students, then the number of students in the corresponding room on the first floor, and the number of students in the middle room in the first floor of the east wing are: (2 marks)

- (a) 2 and 1 respectively
- (b) 3 and 1 respectively
- (c) 3 and 2 respectively
- (d) Each should have 3 students
- (e) Such an arrangement is not possible.

38. If all the students that Mrs. Sharma expected initially had come to rent the rooms, and if Mrs. Sharma had allocated the north-west corner room in the ground floor to 1 student, then the number of students in the corresponding room on the first floor, and the number of students in the middle room on the first floor of the east wing would have been: (2 marks)

- (a) 1 and 2 respectively
- (b) 2 and 3 respectively
- (c) 3 and 1 respectively
- (d) Each should have 2 students.
- (e) Such an arrangement is not possible.

Answer Key

1. (b)	2. (d)	3. (d)	4. (d)
5. (e)	6. (b)	7. (b)	8. (c)
9. (e)	10. (c)	11. (e)	12. (a)
13. (b)	14. (d)	15. (b)	16. (e)
17. (e)	18. (c)	19. (a)	20. (d)
21. (c)	22. (d)	23. (e)	24. (c)
25. (c)	26. (e)	27. (d)	28. (c)

29. (c)	30. (d)	31. (a)	32. (b)
33. (e)	34. (c) and (e)	35. (d)	36. (b)
37. (b)	38. (b)		
-

Solutions:

1. The human need for order is a very strong argument being portrayed in the paragraph. In order to weaken it we need to undermine this logic. Statements I, II and IV undermine this need of order and also as these being false notions propagated by people. Thus option (b) which contains statements I, II and IV is the right answer.
2. To strengthen the case for sinister beliefs we have to find points which lessen the rationality about order and also those which show that there is some tangible proof or sightings of such situations. These points are mentioned in statements I, II and V. Thus option (d) containing these points is the right option.
3. Every idea must have an impression before it hence statements 2, 3, 4 are correct but every impression may or may not lead to an idea. Hence statement 1 is not correct always. Thus leaving out statement 1, option (d) is the correct answer.
4. Here we have to strengthen the argument. The argument is anti media and internet so whichever option shows some negative effect especially in the concentration levels is the correct option. Option (d) which mentions the declining concentration in reading levels is clearly the best option to strengthen the argument.
5. To weaken the above argument, we have to find an option which shows an improvement in the ability of people after getting exposed to some form of media and internet. Option (e) shows an improvement in the ability of judges when they had internet in comparison to those who did not have it. Hence option (e) is the best option.
6. Here the argument talks about acknowledging randomness, but the 2nd option provides finality as those who acknowledge it will be in a position to deal with it. This might or might not be true. Acknowledging randomness is the prerequisite for dealing with it but it gives no finality about the effectiveness of dealing with it. Hence option (b) is the correct choice.
7. The verse mentions war time and its ruthlessness. What happens after war, during peace times is neither mentioned nor hinted at, so any statement mentioning about peace times certainly cannot be implied. Hence option (b) is correct.
8. In order to weaken the argument, we have to prove that cognitive simulation alone is not enough to train the minds of the soldiers. In this context, statement I, which talks about physical stress is an important weakening argument; also statement (d) which talks about artificial simulation creating generic responses among trainees is also a possible argument that would weaken the logic. Statement (c) strengthens the argument, so any option with statement (III) cannot be correct.
Thus option (c) is the correct response.
9. The underlying argument of the paragraph is that just monetary incentives are not enough to motivate a person to work, especially in cases where the work involves more than physical skills. Thus a review of the current incentive methods is needed. These points are very well

covered in statements IV, and V which is included in option (e). Statement I includes the punishment aspect which is not part of the facts mentioned, thus statement I is partially correct and cannot be included in the right option. Thus option (e) is the answer.

10. According to P, the real being is always there regardless of the unreal or the becoming which is not important to study because it is illusionary and not real. Statements IV and V are consistent with the logic of P. Thus option (c) is correct.
11. According to H, the reality is itself in a state of flux and this is what is the real being, so there is no question of there being permanence, the notion of different realities is possible. Thus option (e) is the correct answer.
12. The reviewer of the first option tells how the book has impacted his life. This clearly shows he had read the book in great detail and tried to implement its teachings. Thus option (a) is correct.
13. Objectivity of anything can be checked most accurately if the given information can be broken down into data or facts, else if the information is more subjective, i.e based on emotions or experiences, then the objective evaluation becomes difficult. Here, the 2nd reviewer tells us in what age segment the book is more popular and this can be ratified, or checked. Thus an objective evaluation is possible. So option (b) is correct.
14. The 4th reviewer talks more about the author than about the book. He praises the author and does not mention much about the actual contents of the book. Thus option (d) is correct.
15. As a chairman of one of these power PSU's your argument would only be tenable in case you talk about something that points out to issues/problems which are beyond your reasonable control. Statement (II) clearly does not stand as a valid argument because as the top management of a power PSU, you are expected to deal effectively with your middle management. This statement makes your position weaker by pointing out your own inability to deal with your middle management; hence instead of strengthening your argument it actually weakens it. Similarly, statement (IV) does not strengthen your argument as it is vaguely blaming the government—without being specific about what exactly you need from it.

Statement (V) also does not strengthen your argument, because any target setting of this nature is normally done in consultation with all stake holders. Thus, blaming the targets as unrealistic will effectively mark you out as a 'cry baby' rather than strengthen your argument.

Statement (I) strengthens your argument as it talk about ruling party controlled trade unions delaying work—something that is clearly outside your control.

Similarly, Statement (III) also strengthens your argument as your inability to get funds at reasonable interest rates is something that has been caused by events outside your domain of control.

Thus, option (b) is correct.

16. As the CEO of a company one would be expected to behave in a mature and logical manner, keeping aside personal likes/dislikes and biases. Also, the CEO would be expected to keep the best interests of his company in place. Maximising the value for the shareholders is the most important objective for the CEO of ABC. With this in mind if you were to think about the lines of action given, the following thought process would help you get to the correct answer:

Statement (I) talks about an emotional response to what could be a good opportunity to increase shareholder value. The focus is on personal feelings and the CEO's thinking is inclined towards his own personal bias against the company based on his past experiences. Hence, this line of thought is not appropriate for the CEO (especially since the scenario has now changed).

Statement (II) focuses on 'I will become the CEO of the world's largest telecom company' which is a reaction focused too much on 'I' and 'me'. The consideration does not seem to be about what would happen to the company and whether that would be good or bad for the company but on what benefits 'I' would get out of the deal. Hence, this line of thought is not appropriate for the CEO.

The line of thought in (III) focuses on a trivial issue. Reimbursement of expenses incurred—where the expenses might be running into a few lacs of rupees, in the context of a deal which is likely to be a few hundred or even a few thousand crores is too small an issue for a CEO to focus on. Hence, this line of thought is not appropriate for the CEO.

Statement (IV) focuses on the opportunity for maximising shareholder wealth and value. It is keeping personal biases apart. Hence, this line of thought is appropriate for the CEO.

On evaluating the options, we find that there is only one option that does not include any of (I), (II) or (III) as appropriate and obviously the option talking about (IV) and (V) as appropriate would be the correct answer.

If we consider the line of thought in option (V): It is also appropriate for the CEO because it focuses on logical issues of raising finance and tries to figure out an opportune time to buy them.

Hence, option (e) is correct.

17. Investment decisions are made on the basis of the returns the investment is likely to make. That would depend on how profitable the company you are investing in is likely to be. The logic presented in option (e) is the correct option as the merged entity really has no visible competitive advantage (apart from its size—which is actually debatable as a competitive advantage in an industry like telecom). On the other hand it also talks about the big disadvantage for the merged entity, viz: the high cost debt that the company has taken, thus making it an unattractive investment.

Option (e) is the correct answer.

18. The best way to string the argument against the management is to talk about the global scenario being favorable for wind turbine makers (making them more profitable in both developed and developing countries), followed by pointing out that the company has actually increased sales before finally attacking them with the logic that 'they are trying to increase sales by charging lower prices'. Hence, option (c) is correct.
19. The minimum pieces can be made if he makes pieces of 1,2,4, 8 and 16 inches. With these five pieces, he would be able to pay any amount of gold from 1 inch to 31 inches. Thus, 5 pieces would be the minimum number of pieces. Option (a) is the correct answer.
20. In solving such questions you should first understand what each of the courses of action actually suggests. You should also try to make up your mind about what the principal focus of

the course of action you are looking for should be. In this case, there is clearly a situation of distrust that has been created by the scrupulous contractors. Hence, the problem you are trying to solve is to soothe the frayed tempers, especially of the contract labourers who are a substantial part of company's work force.

A quick reading of the five courses of action would give you that the third one is the most promising—as it tackles the core issue at hand. Also, once you communicate to the contract labourers, you would also need to promise strong action against the security guard guilty of crossing the line. He should not have slapped anyone, no matter what the provocation was.

From amongst the given options, III followed by IV is the best way to deal with the situation.

The other courses of action can be thought of and eliminated as below:

I. This option suggests stopping investigation which does not help the company in any manner. It would tantamount to laying down of arms against the erring contractors who are the root of the problem.

II. This option suggests taking strong action against the trouble makers—which means taking action against some people from the contract labour community. This is likely to instigate a further law and order issue and instead of cooling down matters is likely to make things worse. As a company running production operations, your objective would always be to smoothen out industrial relations so that your production is not affected.

III. Increasing the wages of contract labour, is an unnecessary reaction in the given situation as that is not what the labourers are currently asking for. Hence, taking on additional financial burden is unnecessary.

Thus, option (d) is correct.

21. It is clearly written in the question, that CMMS's guiding principle is 'the welfare of its members'. The main interest of CMMS for its own good will be to remain the only union within the company. At the same time, CMMS has not offered membership to contract labourers till date. Offering membership to them at this point might be detrimental to existing CMMS members as the entry of the huge workforce of contract labourers into CMMS would drastically alter the power equations within CMMS. The current members would find it difficult to control the union as the contract labourers would have too much say in matters.

At the same time, CMMS cannot remain outside the imbroglio claiming that it has got nothing to do with the matter.

Under these considerations, the best course of action would be to represent the contract labourers interest in order to prevent the formation of another union, without offering them membership to CMMS.

Option (c) is the correct answer.

22. The question is asking for the best 'policy decision' by the government at the national level. If we evaluate each of the options we get the following thought process:

Option (a): Rejected as it involves the government getting into micro management of a small issue. It is not a policy decision—as asked by the question.

Option (b): Rejected as it is again a reaction to the situation in one part of the country. Income tax raids in the premises of contractors under investigation might be ordered but it is not the

correct answer for a ‘policy decision at the national level’ as it is simply not a policy decision.

Option (c): Rejected as setting up a new labour welfare office inside the CTM premises is again not a national level policy decision.

Option (e): Rejected as it is again not a national level policy decision.

Option (d) is the best ‘national level policy decision’ as it deals with a national level issue—that of exploitation of contract labourers—and what has happened could happen again as far as the core issue of lack of a proper framework in the existing labour legislations remains unattended to.

Hence, option (d) is the correct answer.

23. The immediate priority for the CTM management obviously has to be the stakeholder who is most affected by the current situation. Contract labourers who are demanding job security and wages at par with regular employees should be the immediate priority of the CTM management. Option (e) is correct.

Solutions for Questions 24 to 26:

If you take a close look at the table of preferences give to us:

Preference	M1	M2	M3	M4	M5
1st	302	302	303	302	301
2nd	303	304	301	305	302
3rd	304	305	304	304	305
4th		301	305	303	
5th			302		

You realise that 301 and 303 are M1’s and M3’s 1st preference rooms respectively. No other manager has put these rooms in their first preference. Hence, these two rooms should definitely be allotted to them as it does not shift any other manager from his 1st preference.

The other thing you realise is that room 302 is top preference for M1, M2 as well as M4. Thus, three different managers are asking for that room but you can give it to only one of them. While doing so, you also need to remember that you should reduce the inconvenience of not getting the first choice room to the other two managers, by at least giving each of them the second choice, if possible.

From this point you can do the following thinking:

Giving 302 to M4, means M1 would get his third choice room (as his second choice room #303 has already been allotted to M3) and M2 would get his third choice room (# 305).

Giving 302 to M2, means M1 would get his third choice room (as his second choice room #303 has already been allotted to M3) and M4 would get his second choice room.

Giving 302 to M1, means M2 and M3 would get their third choice room.

Thus the following allocation, gives us the best way to allocate the rooms:

Manager	M1	M2	M3	M4	M5
Room Allotted	302	304	303	305	301
Preference got	1st	2nd	1st	2nd	1 st

The answers to 24 and 25 are now clear:

- 24. 3 managers get their first choice rooms and hence option (c) is correct.
- 25. The sum of the preference rankings would be $1+2+1+2+1 = 7$. Option (c) is correct.
- 26. The new table of managers and their preferences would look as below:

Preference	M1	M6	M3	M4	M5
1st	302	301	303	302	301
2nd	303	302	301	305	302
3rd	304	303	304	304	305
4th		304	305	303	
5th			302		

In such a case, M6 has to be allotted room number 304 which is his 4th preference room. The following allotment would minimise the sum of preference ranking for all 5 managers:

Manager	M1	M2	M3	M4	M5
Room Allotted	302	304	303	305	301
Preference got	1st	4th	1st	2nd	1st

The new sum of all preference rankings would be 9. Option (e) is correct.

Solutions for Questions 27 and 28:

You need to solve this question by picking up a pair of options for the two questions. Obviously, this question is way too tough and impractical to solve as the minimum solving time, even if you take every pair of options from the two questions, will be very high. The problem is that as you try to fit in things into the framework, you would find that you really do not know what you are looking for, at least in a 2–3 minute time frame. Hence, inside an examination my recommendation is to skip this question altogether.

However, the analysis with the correct pair of options for the two questions would go as follows (first question has an answer of 16 members in the club while the second one has an answer of 5 friends for every individual in the club):

Let us say that the 16 members are numbered 1 to 16. Also let Satya Sadhan be member 1, Satyabrata be member 2, Satyaji be member 3 and Satya Pramod be member 4. Also, let 1’s friends be 2,3,4,5 and 6. Then 2’s remaining 4 friends cannot be common to 1’s other 4 friends apart from 2. This is because of Satyabrata’s statement ‘None of the pair of friends in this club has any common friend.’

Thus, we can list 2’s friends as (1,7,8,9 and 10). Then, when we think of 3’s friends, it is evident that 3 is not friends with 2. Hence, 2 and 3 would need to have 2 mutual friends between them. Also 1 is already known to be a friend with both 2 and 3. Thus, we can add 7 as a common friend between 2 and 3. (Note: This is necessary due to Satyajit’s statement ‘Every pair of member who are not friends has exactly two common friends in this club.’)

This means that 3’s friends are 1 and 7. The other 3 friends for 3 would be 11,12 and 13 (as they need to be other than 4,5,6 as well as 8,9,10). At this point the solution grid would look as follows:

1(SS)	2, 3, 4, 5, 6	
2 (S)	1, 7, 8, 9, 10	2 and 3 are not friends with each other and have 2 common friends 1 and 7.
3 (Satyajit)	1, 7, 11, 12, 13	
4 (SP)	1	
5	1,	
6	1	
7	2, 3	
8	2	
9	2	
10	2	
11	3	
12	3	
13	3	
14		
15		
16		

We now need to think of 4’s five friends. The following thought process would help you think about 4’s friends.

1 is already known as one of 4’s friends.
4 is not a friend of either 2 or 3. Thus, he needs to have two common friends with both of them. Suppose we fix 7 as a common friend for 4 and 2. Then 4 and 3 also have 7 as a common friend. Hence, the other three friends of 4 would be outside of 5,6 (as 4 cannot have a mutual friend with his friend 1) and outside of 8,9,10,11,12 and 13 (as 4 cannot have more than two common friends with either of 2 and 3). 4’s friend list hence becomes: (1,7,14,15,16)

The table then becomes:

1(SS)	2, 3, 4, 5, 6

2 (S)	1, 7, 8, 9, 10
3 (Satyajit)	1, 7, 11, 12, 13
4 (SP)	1, 7, 14, 15, 16
5	1,
6	1
7	2, 3, 4
8	2
9	2
10	2
11	3
12	3
13	3
14	4
15	4
16	4

From this point, think about 16’s friends. 16 already has 4 as a friend and hence since 14 and 15 too have 4 as their friends, the friend list of 16 cannot have 14 and 15 (Satyabrata’s statement). Thus, 16’s friends can be 4,10,11,12 and 13. The solution grid would now look as below:

1(SS)	2, 3, 4, 5, 6
2 (S)	1, 7, 8, 9, 10
3 (Satyajit)	1, 7, 11, 12, 13
4 (SP)	1, 7, 14, 15, 16
5	1,
6	1
7	2, 3, 4
8	2
9	2
10	2, 16
11	3, 16
12	3, 16

13	3, 16
14	4,
15	4,
16	4, 10, 11, 12, 13

Further 2 mutual friends are required between the pairs 14 & 16 ; 14 and 15; And the pair 15 and 16. 4 is already a friend of 14, 15 and 16. So if we think of 13 as another friend of 14, 15 and 16 we would get that the friends of 13 are (3, 14, 15, 16). The remaining friend of 13 cannot come from 10, 11 and 12 (as they have common friends with 13). Thus, we can keep 9 as 13’s 5th friend. The solution grid would now look as follows:

1(SS)	2, 3, 4, 5, 6
2 (S)	1, 7, 8, 9, 10
3 (Satyajit)	1, 7, 11, 12, 13
4 (SP)	1, 7, 14, 15, 16
5	1,
6	1
7	2, 3, 4
8	2
9	2, 13
10	2, 16
11	3, 16
12	3, 16
13	3, 16, 14, 15, 9
14	4, 13
15	4, 13
16	4, 10, 11, 12, 13

Now think of 15. 15’s friends already identified are 4 and 13. Also, since 15 has common friends with 14 he cannot be 14’s friend. Further since 15 and 16 are not friends, we already know the two friends they have in common as 4 and 13. (Satyajit’s condition). Thus, 15 cannot be friends with any of 16’s other friends (viz: 10, 11 and 12). Hence, we can put 15’s friends as 7,8 and 9 and his friend list would become (4, 7, 8, 9, 13).

The solution grid would now look as follows:

1(SS)	2, 3, 4, 5, 6

2 (S)	1, 7, 8, 9, 10
3 (Satyajit)	1, 7, 11, 12, 13
4 (SP)	1, 7, 14, 15, 16
5	1,
6	1
7	2, 3, 4, 15
8	2, 15
9	2, 13, 15
10	2, 16
11	3, 16
12	3, 16
13	3, 16, 14, 15, 9
14	4, 13
15	4, 7, 8, 9, 13
16	4, 10, 11, 12, 13

From this point thinking about 14 would tell you that 14 already has 2 mutual friends with 15 and 16 (both 4 and 13). Thus he cannot be friends with any other friend of either 15 or 16. This rules out his friendship with 7,8,9,10,11 and 12. Thus, 14 must be friends with 5 and 6. 14’s friend list becomes 4, 5, 6, 13. But we cannot have any possibility for his 5th friend (as 7, 8, 9, 10, 11, 12, 1, 2, 3 and 4 cannot be 14’s friends). Hence, we would need to retrace our steps to the point where we fixed 13 as a mutual friend for 14, 15 and 16. The grid just before that looked as follows:

1(SS)	2, 3, 4, 5, 6
2 (S)	1, 7, 8, 9, 10
3 (Satyajit)	1, 7, 11, 12, 13
4 (SP)	1, 7, 14, 15, 16
5	1,
6	1
7	2, 3, 4
8	2
9	2
10	2, 16

11	3, 16
12	3, 16
13	3, 16
14	4
15	4,
16	4, 10, 11, 12, 13

Now 2 mutual friends are required between the pairs 14 & 16 ; 14 and 15; And the pair 15 and 16. 4 is already a friend of 14, 15 and 16. So if we think of 13 as another friend of 14,15 and 16 we would get that the friends of 13 are (3, 14, 15, 16). However, we have seen that this reasoning gets us to a point where it is not possible to move further. Hence, let us take 4 and 13 as common friends for 15 and 16. Then first try to complete the friend list of 15 with 7, 8, 9

The solution grid would now look as follows:

1(SS)	2, 3, 4, 5, 6
2 (S)	1, 7, 8, 9, 10
3 (Satyajit)	1, 7, 11, 12, 13
4 (SP)	1, 7, 14, 15, 16
5	1,
6	1
7	2, 3, 4, 15
8	2, 15
9	2, 13, 15
10	2, 16
11	3, 16
12	3, 16
13	3, 15, 16
14	4
15	4, 7, 8, 9, 13
16	4, 10, 11, 12, 13

Now think of 14. 14 needs to have 2 mutual friends with 15 and 2 mutual friends with 16. However, we have seen earlier that we cannot fill this slot with 13 as that does not allow us to complete the 5 friends for 14. Thus, we try to take two different sets of 2 mutual friends for 14 with 15 and 14 with

16 respectively. This can be done by making 7,10,5 and 6 as friends of 14.

The solution grid would now look as follows:

1(SS)	2, 3, 4, 5, 6
2 (S)	1, 7, 8, 9, 10
3 (Satyajit)	1, 7, 11, 12, 13
4 (SP)	1, 7, 14, 15, 16
5	1, 14
6	1, 14
7	2, 3, 4, 14, 15
8	2, 14,15
9	2, 13, 15
10	2, 14, 16
11	3, 16
12	3, 16
13	3, 15, 16
14	4, 5, 6, 7, 10
15	4, 7, 8, 9, 13
16	4, 10, 11, 12, 13

Now think of 13. 13 cannot have any mutual friends with 15 or 16 or 3. Thus, 7, 8, 9, 10, 11, 12 cannot be friends with 13. Also, 14, 1, 2 and 4’s friends are already fixed. Thus, only 5 and 6 can be friends with 13. But this creates the following situation where 5 and 6 cannot be friends with each other. So you would need to retrace your steps again and try a different combination.

As you can see, this question is too complex to handle in the context of an aptitude exam where you would need to do this within 2 to 3 minutes.

The correct answers are:

27. Option (d) is correct.
28. Option (c) is correct.
29. The offers on Cozy Travel are limited to only the base fare. Normally, in airlines bookings the substantial part of the cost of a ticket that a passenger has to bear is in the form of surcharges and taxes. There are instances where the base fare for a ticket costing 3000 is as low as 1.
Thus, the offer of free base fare does not make too much sense. Hence, none of the options with Cozy Travel are likely to become popular.
Between the cash back offer from Easy Travel (option d) and the Ek ke saath ek offer from

Easy Travel, the Ek ke saath ek offer is more attractive as it neither has any hidden costs nor does it have any conditions. The only restriction is that this offer is only for Air Spice—which might not be too much of a restriction as in any economy most airlines have a similar kind of network and coverage.

The cash back offer—although it gives 25% cash back, is limited to Gs. 400. Thus, for tickets costing over Gs. 2000, the cash back percentage wise would be lower than Gs. 400.

Hence, option (c) is the correct answer.

30. Clearly, if the offer from Cool_Yatra is the most successful, it means that the clincher for the offer is the tie up with Gaga Air—as apart from that the other offers are better in terms of the freebies on offer. Looking into the options at this stage, let us look for the options which can be easily removed.

Option (b) is removed as the issue does not seem to be the number of days in which the refund is going to be credited to the customer. Hence, tweaking with that issue is unlikely to make a difference to the fortunes of the offer.

Option (e) is rejected because it is clearly mentioned in the scheme details of Cozy Travel that the free ticket is available on any airline. Thus, Gaga Air is also likely to be already a part of the Cozy Travel offer. Hence, this recommendation is not likely to make customers sit up and notice it.

Option (c) has the same problem as option (e). The Cozy Travel offer is already allowing the customer to choose any airline and hence it is already allowing customers to choose Gaga Air also. Hence, making this change in the offer is unlikely to have any positive impact on the fortunes of the scheme.

Between options (a) and (d), Option (d) is the best answer—as it takes care to target all the customers of Gaga Air. Option (a) is forcing people to buy an Air Spice ticket to get one free in Gaga Air; while option (d) gets people to buy a ticket from Gaga Air and get another one absolutely free. The impact this recommendation would have would be the maximum in terms of making the ‘EK Ke Saath Ek offer’ more attractive.

Hence, option (d) is the correct answer.

31. He needs to get two tickets—one from the MAAT center to his hometown, the other from his hometown to Akashpur. The Ek ke Saath Ek offer is the best offer for him as he has to pay the full fare for the first ticket and will get the second ticket absolutely free.

The other options, if compared with this offer, do not make much sense for him. Options (b) and (e) can be removed as getting a hotel booking through Cozy Travels is unnecessarily expensive. Similarly, for Jagan option (a) is more attractive than options (c) and (d).

Hence, option (a) is correct.

32. The Ek Ke Saath Ek offer is not available on Janaki’s travel dates, hence she cannot opt for the same.

The Cash Back offer of Easy Travel would give her back Gs. 800. Hence, it would cost Gs 4200.

The Cozy Travel and the Cool Yatra offers only offer a free ticket (base fare only). Thus, for each of these she would get 1 free ticket where the Gs. 600 value of base fare is waived off.

Thus, the total cost would be 4400 which is higher than what she has to spend if she uses the Cash Back offer.

In order to think about the Cozy Travel offer you have to assume that the second free ticket has no value for her as nothing is mentioned about the same in the question.

Thus, for her the cheapest option is to take the Cash Back offer from Easy travels. Option (b) is correct.

Solutions for Questions 33 to 35:

By reading the information provided in the clues, the following grid structure would be created. Note: The following clues have been used in this grid:

The six cities where each of them is from are identified as: Chennai, Bengaluru, Kochi, Kolkata, Mumbai and Hyderabad (from the opening statement of the problem).

From clues throughout the question, we get that the professions are Engineer, Teacher and Doctor.

From the clue: The Engineer from Bengaluru is older than the Engineer from Chennai—we realise that the engineers are from Chennai and Bengaluru.

From the clue: ‘While arranging the teachers in increasing order of age, it was observed that the middle person’ we realise that there were 3 teachers.

The oldest person is from Kolkata can be used directly into the grid.

We now have the following grid:

Place	Person	Destination	Age	Qualification	
Chennai			<36	Engineer	
Bengaluru				Engineer	Older Than Chennai Engineer
Kochi			<36		
Kolkata			Oldest		
Mumbai					
Hyderabad					

From this point we need to think of who the three teachers are and who the doctor is: At this point we know that since the doctor (Z) is the youngest, he cannot be from Kolkata. Hence, the person from Kolkata is a teacher.

From the clue: ‘The teacher from Kochi is four years older than the 31 year old doctor, who is not from Mumbai.’ We realise that the person from Kochi and Mumbai must be teachers and that the doctor must be from Hyderabad. The grid now becomes:

Place	Person	Destination	Age	Qualification	
Chennai			<36	Engineer	
Bengaluru				Engineer	Older Than Chennai Engineer
Kochi			35	Teacher	

Kolkata			Oldest	Teacher	
Mumbai				Teacher	
Hyderabad	Z		31	Doctor	

We now need to concentrate on fitting the destinations and the ages by using clues related to those.

From the clue: ‘The eldest amongst the persons from Chennai, Bengaluru, Mumbai and Hyderabad go down at Koderma and the youngest got down at Kanpur’ we know that the doctor got down at Kanpur.

From the clue: ‘The oldest person is from Kolkata and his/her profession is the same as that of the person who got down at Mughalsarai’, we know that it must be a teacher other than the one from Kolkata who got down at Mughalsarai.

From the clue: ‘Person Y who got down at Mughalsarai is less than 34 years of age’, we know that the person Y would be from Mumbai.

The grid would now become:

Place	Person	Destination	Age	Qualification	
Chennai			<36	Engineer	
Bengaluru				Engineer	Older Than Chennai Engineer
Kochi			35	Teacher	
Kolkata			Oldest	Teacher	
Mumbai	Y	Mughalsarai	<34	Teacher	
Hyderabad	Z	Kanpur	31	Doctor	

From the clue: The persons from Bengaluru, Chennai, Mumbai and Hyderabad got down at four different stations. The eldest amongst these four got down at Koderma and the youngest at Kanpur. The person who got down at New Delhi is older than the person who got down at Mughalsarai.

And from the clue: ‘the middle person is as old as the engineer from Chennai’.

We realise that the engineer from Chennai must be 35. Thus, the oldest amongst the persons from Bengaluru, Chennai, Mumbai and Hyderabad would be the engineer from Benagaluru and he would get down at Koderma. We would then realise that the Person from Chennai got down at New Delhi.

Place	Person	Destination	Age	Qualification	
Chennai		New Delhi	35	Engineer	
Bengaluru		Koderma		Engineer	Older Than Chennai Engineer
Kochi			35	Teacher	
Kolkata			Oldest	Teacher	

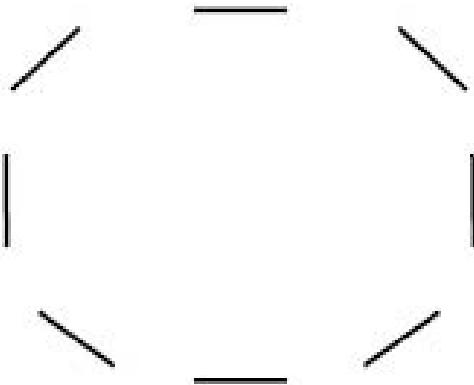
Mumbai	Y	Mughalsa rai	<34	Teacher	
Hyderabad	Z	Kanpur	31	Doctor	

From this point we can move into the questions.

33. Evaluating each of the options we see that for option (e) the person who got down at New Delhi is older than Y, who is older than the person from Hyderabad.
Option (e) is the correct answer.
34. The first thing you should remember before trying to solve this question is that there are three travellers who have worked previously in the Army. Thus, there would be three of them who would be fresh graduates. Hence, we should be first looking at options (c) and (e). The only condition which is mentioned in the problem is ‘Among the travellers from the same profession, those with military background are at least five years older than the travellers who joined as fresh graduates.’ In this context both options (c) option (e) are correct as both can meet the given constraint.
Hence, both options (c) and option (e) are correct.
35. Since W is neither the youngest nor the oldest from her profession, she cannot be an engineer and she cannot be from Kolkata. Hence, she must be from Kochi.
Hence, option (d) is correct.

Solutions for Questions 36 to 38:

The key to start solving this question is to understand the way the rooms are placed.
Since, there are 8 rooms on each floor and at the same time there are 6 rooms in each of the four wings, it can only mean that some rooms are counted in two wings.
The following would be how each of the floors would look:



What you need to notice here is that any person who is put in a corner room, would be counted twice —once for each wing in whose intersection the room lies, when the totals for the number of people in every wing are being counted. At the same time, people in the middle rows would be counted only once.
Also, there are a total of 8 corner rooms – 4 on each floor. Besides, there are also rooms which belong exclusively to one wing.
Before you move into the questions of the set, and trying to solve them, you should first make a mental note of the constraints in the question.

The following interpretations can be made of the conditions that have been mentioned for the placement of individuals in the 16 rooms:

- i. Each room has to be occupied by a minimum of 1 to a maximum of 3 students.
- ii. Each of the wings should have 11 people. Hence, the total of the number of people in all four wings should be 44. {Note: we have already realised that every student who is put in a corner room would be counted twice when the count for the number of people in every wing is being done. Hence, the number of students who actually come to rent the rooms would be lower than this number of 44}.
- iii. The first floor has twice as many students as on the ground floor.
Note: Apart from the obvious interpretation of this statement, it also means that the number of people who came to rent rooms from Mrs. Sharma must be a multiple of 3.
- iv. 3 people less than what she had expected turned up to rent the rooms. She was still able to allocate the rooms according to the rules means that it is possible to allocate the rooms according to the rules for the number of students she expected as well as for the number of students who actually came (when 3 students less than what she expected turned up).

From this point and with these realisations we can now move on to make sense of the questions.

36. The question asks us to find out the number of people who came to rent the rooms. The number as we already realise must be a multiple of 3. (Interpretation (iii) above)

Looking at the options, all multiples of 3 from 24 to 33 have been covered and we also have a none of these option.

Let us try to see each one of these options one by one to check their fit with the given conditions.

Thought process to check for option (a): If 24 students had turned up for renting

The count for the number of students in the wings is 44. This, in essence means that 24 students have to be counted 44 times. Thus, there must be a double count of 20 students which means that there must be 20 students placed in the corner rooms.

However, we already have the interpretation (i) above which tells us that each room should have a minimum of 1 person. This means that there must be at least 8 students who would not be in the corner rooms. With the other 16 people all placed in the corner rooms we can never achieve a total count of 44 for the number of total number of people in the wings.

Note: This is because, when we put a person in a corner room, he is counted in both the wings that the corner room is a part of. Thus, 1 person is counted twice (when the count is taken for the number of people in each wing). This is what can be described also as a double count. This is the only mechanism through which the gap between the actual number of students who rented with Mrs. Sharma and the 44 students (the head count of how many students were there in total in each wing) can be bridged. In this case, if 24 people rented out her rooms, it obviously means that the gap between 24 and 44 being 20, we need exactly 20 people to be double counted as a part of two wings and 4 people to be single counted as a member of only 1 wing.

With 8 students to be placed compulsorily in the 8 rooms which are part of only 1 wing, the maximum number of people who can be double counted is 16. Thus, 24 students can be counted a maximum of 40 times, but we cannot reach a total of 44.

Thus, this option can be rejected.

Thought process to check for option (d): If 33 students had turned up for renting—this means that if the original number she had expected had actually turned up for renting she would get a total of 36 students for renting. Since, the problem clearly points out to the fact that she would have been able to allocate the rooms with the actual as well as the expected number of students while obeying all the rules, we can check for 36 students and see whether we can allocate rooms according to the rules. (We do this because it is obviously easier to check for 36 than checking for 33).

Let us check whether we can have 36 as a feasible situation for the number of students she expected. 36 students would need to be counted 44 times, which means that there would be a double count of exactly 8 of the 36 people. Thus, the 8 corner rooms should have exactly 8 students—one in each.

The other 28 students would necessarily be allocated the 8 rooms which are not the corner rooms – and hence are part of only 1 wing. However, you should realise immediately that this cannot be done because of the constraint that no room has more than 3 students.

Thus, option (d) is also rejected.

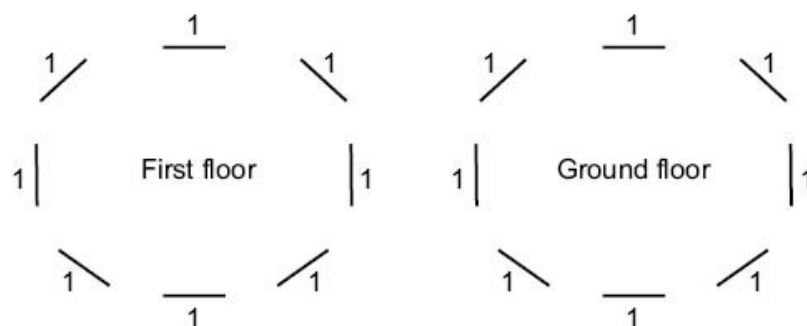
Thought process to check for option (c): If 30 students had turned up for renting—this means that if the original number she had expected had actually turned up for renting she would get a total of 33 students for renting. Since, the problem clearly points out to the fact that she would have been able to allocate the rooms with the actual as well as the expected number of students while obeying all the rules—we can check for 33 students and see whether we can allocate rooms according to the rules. (We do this because it is obviously easier to check for 33 than checking for 30).

Let us check whether we can have 33 as a feasible situation for the number of students she expected. 33 students for renting would mean that 22 are on the first floor and 11 on the ground floor.

Also, 33 students would need to be counted 44 times, which means that there would be a double count of exactly 11 of the 33 people.

Thus, the 8 corner rooms should have exactly 11 students.

Before you start thinking about this, first think about placing the minimum requirements of 1 in each room. When you do so both the floors would look the same as follows:



At this point, if you analyse the situation you would realise that we have placed 8 students on each floor and there are 17 more students who need to be put on the two floors combined.

With the constraint that the number of students on the first floor is double the number of students on the ground floor it follows that we can place exactly 3 more students on the ground floor and exactly 14 more students on the first floor—so as to make a total of 11 students on the ground floor and 22 students on the first floor.

Also, you have already double counted the 8 students who are in the 8 corner rooms of the two floors. This means you need to place 3 more students in the corner rooms and 14 more students in the non-corner rooms which belong to only one wing.

The situation we are at in this thought process can be represented through the following table:

Floor	Number of Students already Placed		Number of Students to be Placed		Number of Students to be Placed Floor Wise
	Corner Rooms	Middle Rooms	In Corner Rooms	In Middle Rooms	
First	4	4			14
Ground	4	4			3
			3	14	

From the above table you should be able to visualise that we simply cannot complete this allocation by obeying all the rules. That is because, even if you were to put 3 students in the ground floor middle rooms you would still be left with the following situation:

Floor	Number of Students already Placed		Number of Students to be Placed		Number of Students to be Placed Floor Wise
	Corner Rooms	Middle Rooms	In Corner Rooms	In Middle Rooms	
First	4	4	3	11	14
Ground	4	4	0	3	3
			3	14	

The problem with this allocation is that we are trying to put 11 more students into 4 first floor middle rooms (which are already occupied by 4 students placed there initially).

The maximum capacity available for the 4 middle rooms of the first floor is 8 (if we put two students more in each of these rooms, there would be 3 students in each of these rooms). This means that we really cannot make this allocation without disturbing the rules.

Hence, option (c) also gets rejected.

This leaves us with only 1 option, viz. option (b) —which we need not check.

Note that option (e) none of these is rejected because if 24 was not possible nothing below 24 would be possible as a number, and so also if 33 is not possible nothing above 33 would be

possible.

Hence, option (b) is correct.

37. Before we start solving this question, we already realise that there were 27 students who rented out the rooms (from the answer to the previous question). 27 students counted 44 times, means that 17 students must be double counted (hence should be placed in the corner rooms) and 10 students must be single counted (hence, placed in the middle rooms).

Besides, there should be 18 students on the first floor and 9 on the ground floor (in order to maintain a 2:1 ratio for the number of students to be placed on the first floor to the number of students to be placed on the ground floor).

Also, the minimum requirement is to place 1 person in every room. The starting thought in this situation would look as below:

Floor	Number of Students already Placed		Number of Students to be Placed		Number of Students to be Placed Floor Wise
	Corner Rooms	Middle Rooms	In Corner Rooms	In Middle Rooms	
First	4	4			10
Ground	4	4			1
			9	2	

Now, if we use the condition given in the question, i.e. the north-west corner room on the ground floor goes to 2 students, the grid would change to:

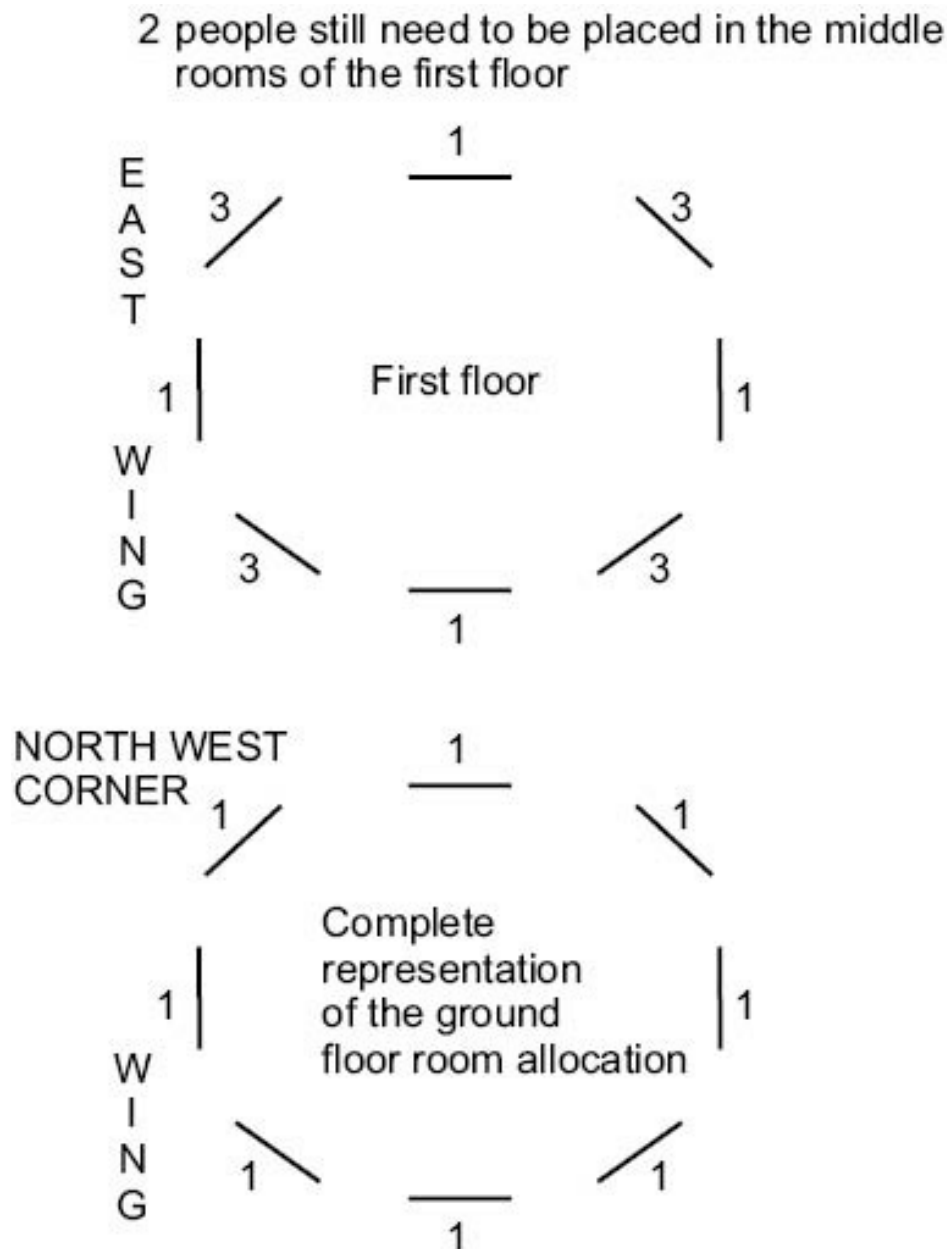
Floor	Number of Students already Placed		Number of Students to be Placed		Number of Students to be Placed Floor Wise
	Corner Rooms	Middle Rooms	In Corner Rooms	In Middle Rooms	
First	4	4			10
Ground	5	4			0
			8	2	

This would further mean that the remaining 10 students to be placed should all go the first floor. Thus, the student allocation would look like:

Floor	Number of Students already Placed		Number of Students to be Placed		Number of Students to be Placed Floor Wise
	Corner Rooms	Middle Rooms	In Corner Rooms	In Middle Rooms	
First	12	6			0
Ground	5	4			0
			0	0	

This obviously means that each of the first floor corner rooms must have 3 students. Thus, the north-west corner room on the first floor would also have 3 students. Option (a) is clearly rejected at this point.

For thinking about the number of students in the east wing middle room on the first floor we would need to consider the current sure allocation of students. The following figures would make things clear:



If you look at the above two figures, you see that we already have a count of 11 for the number of people in the east wing (as well as the south wing). Hence, the remaining 2 students who have to go to the middle rooms of the first floor should go to the north wing (wing facing north) and the west wing (wing facing west).

Thus, the number of students in the middle room of the east wing on the first floor is 1.

Hence, option (b) is the correct answer.

38. In order to solve this question you would need to think of 30 students coming to rent the rooms. Continuing in the fashion described above, you would be able to reach a point where you realise that only the situation given in option (b) would match the given situation.

Hence, option (b) is the correct answer.

Directions for Questions 1–3: These are based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question.

In a local pet store, seven puppies wait to be introduced to their new owners. The puppies, named Ashlen, Blakely, Custard, Daffy, Earl, Fala and Gabino, are all kept in two available pens. Pen 1 holds three puppies, and pen 2 holds four puppies.

If Gabino is kept in pen 1, then Daffy is not kept in pen 2.

If Daffy is not kept in pen 2, then Gabino is kept in pen 1.

If Ashlen is kept in pen 2, then Blakely is not kept in pen 2.

If Blakely is kept in pen 1, then Ashlen is not kept in pen 1.

1. Which of the following groups of puppies could be in pen 2?
 - (a) Gabino, Daffy, Custard, Earl.
 - (b) Blakely, Gabino, Ashlen, Daffy.
 - (c) Ashlen, Gabino, Earl, Custard.
 - (d) Blakely, Custard, Earl, Fala.
 - (e) Gabino, Ashlen, Fala, Earl.
2. If Earl shares a pen with Fala, then which of the following **MUST** be true?
 - (a) Gabino is in pen 1 with Daffy.
 - (b) Custard is in pen 2.
 - (c) Blakely is in pen 2 and Fala is in pen 1.
 - (d) Earl is in pen 1.
 - (e) Gabino shares a pen with Blakely.
3. If Earl and Fala are in different pens, then which of the following must **NOT** be true?
 - (a) Fala shares a pen with Custard.

- (b) Gabino shares a pen with Ashlen.
- (c) Earl is in a higher-numbered pen than Blakely.
- (d) Blakely shares pen 2 with Earl and Daffy.
- (e) Custard is in a higher-numbered pen than Fala.

Directions for Questions 4–6: Read the following passage and answer the questions that follow.

In calendar year 2008, there was turbulence in the air as Jet Airways' Chairman pondered what course of action the airline should take. Air India was also struggling with the same dilemma. Two of India's largest airlines, Air India and Jet Airways, had sounded caution on their fiscal health due to mounting operational costs. A daily operational loss of \$2 million (₹ 8.6 crore) had in fact forced Jet Airways to put its employees on alert. Jet's Senior General Manager had termed the situation as grave. Jet's current losses were \$2 million a day (including Jet-Lite). The current rate of Jet Airways' domestic losses was \$0.5 million (₹ 2.15 crore) and that of JetLite was another \$0.5 million. International business was losing over \$1 million (₹ 4.30 crore) a day.

The situation was equally grave for other national carriers. Driven by mounting losses of almost ₹ 10 crore a day, Air India, in its merged avatar, was considering severe cost-cutting measures like slashing employee allowances, reducing in-flight catering expenses on short-haul flights and restructuring functional arms. The airline also considered other options like cutting maintenance costs by stationing officers at hubs, instead of allowing them to travel at regular intervals. Jet Airways, Air India and other domestic airlines had reasons to get worried, as 24 airlines across the world had gone bankrupt in the year on account of rising fuel costs. In India, operating costs had gone up by 30–40%. Fuel prices had doubled in the past one year to ₹ 70,000 per kilolitre, forcing airlines to increase fares. Consequently, passenger load had fallen to an average 55–60% per flight from previous year's peak of 70–75%. Other airlines faced a similar situation; some were even looking for buyers. Domestic carriers had lost about ₹ 4,000 crore in 2007–08 with Air India leading the pack. 'As against 27% wage bill globally, our wage bill is 22% of total input costs. Even then we are at a loss', an Air India official said. Civil aviation ministry, however, had a different take. 'Air India engineers go to Dubai every fortnight to work for 15 days and stay in five-star hotels. If they are stationed there, the airline would save ₹ 8 crore a year. This is just the tip of the iceberg. There are several things we can do to reduce operational inefficiency'. According to analysts, Jet Airways could be looking at a combined annual loss of around ₹ 3,000 crore, if there were no improvement in operational efficiencies and ATF prices. Against this backdrop, the airline had asked its employees to raise the service bar and arrest falling passenger load.

4. Which of the followings are the reasons for Jet Airways not doing well?

- 1. Rising ATF prices
 - 2. Reduced passenger load
 - 3. Declining service quality
 - 4. Staff travelling to Dubai
- (a) 1 and 2
 - (b) 2 and 3
 - (c) 1, 2 and 3
 - (d) 1, 2 and 4
 - (e) 1, 2, 3 and 4

5. The total loss for the airline industry was likely to be ` 10,000 crore. Jet Airlines lost ` 3,000 crore, Air India lost ` ‘X’ crore and ‘rest of the airlines’ lost ` ‘Y’ crore. What was the loss for the ‘rest of the airlines’, in 2008?
 - (a) Cannot be determined
 - (b) ` 3,350 crore
 - (c) ` 3,690 crore
 - (d) ` ,340 crore
 - (e) None of the above
6. Suppose fuel constitutes 30% of the revenues, do you think airlines would be in a better situation by reducing prices?
 - (a) Yes
 - (b) Data insufficient to reach decision
 - (c) No
 - (d) It would not matter
 - (e) None of the above

Directions for Questions 7–11: These questions are based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question.

Five colleagues pooled their efforts during the office lunch-hour to solve the crossword in the daily paper. Colleagues: Mr. Bineet, Mr. Easwar, Ms. Elsie, Ms. Sheela, Ms. Titli. Answers: Burden Barely, Baadshah, Rosebud, Silence. Numbers: 4 down, 8 across, 15 across, 15 down, 21 across. Order: First, second, third, fourth, fifth.

1. Titli produced the answer to 8 across, which had the same number of letters as the previous answer to be inserted, and one more than the subsequent answer which was produced by one of the men.
2. It was not Bineet who solved the clue to ‘Burden’, and Easwar did not solve 4 down.
3. The answers to 15 across and 15 down did not have the same number of letters.
4. ‘Silence’, which was not the third word to be inserted, was the answer to an across clue.
5. ‘Barely’ was the first word to be entered in the grid, but ‘Baadshah’ was not the second answer to be found.
6. Elsie’s word was longer than Bineet’s; Sheela was neither the first nor the last to come up with an answer.
7. The Fifth word to be worked out was an answer to an across clue.
7. What was Sheela’s word?

(a) Baadshah	(b) Silence
(c) Rosebud	(d) Barely
(e) Burden	
8. What could be Titli’s answer?

- (a) Baadshah (b) Silence
(c) Rosebud (d) Barely
(e) Burden
9. What was Titli's order?
(a) First (b) Second
(c) Third (d) Fourth
(e) Fifth
10. What was Easwar's number?
(a) 4 down (b) 21 across
(c) 8 across (d) 15 down
(e) 15 across
11. What was Bineet's word?
(a) Barely (b) Burden
(c) Silence (d) Rosebud
(e) Baadshah

Directions for Questions 12 and 13: Read the following passage and answer the questions that follow.

An audit unearthed a financial scam in NWC Corporation. One or more among the 9 financial accountants of NWC Corporation are suspected to have fudged the accounts. Following are the statements made by the nine suspects.

Shrinivas: Nagraj fudged the accounts.

Datta: Shrinivas did not fudge the accounts.

Nagraj: Datta is lying and I did not fudge accounts.

Jose: Shrinivas is telling the truth.

Samuel: Exactly three of the suspects are telling the truth.

Ejaz: Datta is lying and Shrinivas fudged the accounts.

Chaudhary: Datta fudged the accounts.

Ganeshan: Datta is lying and Shrinivas is telling the truth.

Panda: Samuel is lying.

12. If Samuel is telling the truth, which of the following statements is true?
(a) Chaudhury and Datta are telling the truth.
(b) Nagraj fudged the accounts.
(c) Chaudhury and Jose are telling the truth.
(d) Shrinivas and Datta are telling the truth.
(e) Shrinivas fudged the account.

13. If Panda is lying, which of the following statements cannot be true?
- (a) Nagraj, Ganeshan and Ejaz are all lying.
 - (b) Datta fudged the accounts.
 - (c) Shrinivas did not fudge the accounts.
 - (d) Jose and Shrinivas are telling the truth.
 - (e) Nagraj fudged the accounts.

Directions for Questions 14–16: These questions are based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question.

Seven bands were scheduled to perform during the weeklong music festival at XLRI. The festival began on a Monday evening and ended on the Sunday evening. Each day only one band performed.

Each band performed only once. The organising committee had the task of scheduling the performances of the seven bands—Cactus, Axis, Enigma, Boom, Fish, Dhoom and Bodhi Tree. The festival schedule followed the following conditions: the performance of Bodhi Tree, the home band of XLRI, did not precede the performance of any other band.

Among the visiting bands three were rock bands and the other three were fusion bands. All three bands of the same genre were not allowed to perform consecutively. Boom, which was a rock band, refused to perform immediately before or after Fish. Meet, who was a lead vocalist with a rock band, refused to perform after Angelina. Angelina, the only female lead vocalist in the music fest besides Bony, was with the band Enigma. Angelina refused to perform after Thursday citing personal reasons. Ali, who was the lead vocalist of a rock band, was not with the band Dhoom, and did not perform on Saturday. Sid, the lead vocalist of the rock band Cactus, could perform only on Monday. Rupam, the only male among the lead vocalists of the fusion bands, was with Fish and performed on Wednesday. None of the bands performed in the absence of their lead vocalist.

14. All of the following statements can be true except:
- (a) If Meet was the lead vocalist of Axis then Ali was the lead vocalist of Boom.
 - (b) If Meet was the lead vocalist of Dhoom then Bony was the lead vocalist of Axis.
 - (c) If Bony was the lead vocalist of Dhoom then Meet was the lead vocalist of Axis.
 - (d) If Ali was the lead vocalist of Boom then Meet was the lead vocalist of Dhoom.
 - (e) If Bony was the lead vocalist of Axis then Meet was the lead vocalist of Boom.
15. Which of the following must be true?
- (a) Ali performed on Saturday and Enigma performed on Thursday.
 - (b) Dhoom performed on Thursday and Angelina performed on Tuesday.
 - (c) Boom performed on Friday and Meet performed on Tuesday.
 - (d) Ali performed on Friday and Enigma performed on Tuesday.
 - (e) Bony performed on Saturday and Axis performed on Thursday.
16. Which of the following is a plausible performance sequence?
- (a) Cactus, Enigma, Fish, Dhoom, Boom, Axis
 - (b) Cactus, Dhoom, Fish, Boom, Enigma, Axis

- (c) Cactus, Axis, Fish, Boom, Enigma, Dhoom
- (d) Cactus, Axis, Fish, Enigma, Boom, Dhoom
- (e) Cactus, Boom, Fish, Axis, Enigma, Dhoom

Directions for Questions 17–21: These questions are based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question.

A BPO has assigned duty to nine operators—Abdulla, Ballal, Chandan, Dogra, Eshita, Falguni, Ganguli, Henri and Indra, on Monday, January 05, 2009 from 00:00 hours. Each operator commences duty at any of the following hours: 00:00 hrs, 04:00 hrs, 08:00 hrs, 12:00 hrs, 16:00 hrs and 20:00 hrs. At any point in time, at least one operator is required to take clients' calls. Each operator works continuously for eight hours. All operators located at any single location start work simultaneously. The operators took training in five different colleges—Abhiman College, Sutanama College, Gutakal College, Barala College and Khatanama College. These colleges are located in the cities: Jamshedpur, Pune, Noida, Hyderabad and Mangalore, not necessarily in that order. The operators operate from the cities where their respective colleges are located.

Indra operates alone from a city other than Mangalore and Jamshedpur. Operator(s) trained in Abhiman College will start working at 12:00 hrs. Only Dogra and Falguni operate from Pune, but they are not trained in Gutakal College. Three of the operators took training from Sutanama College, and they operate from Noida. The operator(s) from Jamshedpur will start working at 00:00 hrs. Abdulla and Henri operate together as a two member team from a single location. They do not operate from Mangalore. No operator(s) will join at 20:00 hrs. Ballal, who operates alone from his location, was not trained in Barala College, and will commence his duty four hours after the operator(s) trained in Gutakal College. The operator(s) trained in Barala College operate from Hyderabad. The number of operator(s) trained in Khatanama College is same as the number of operator(s) trained in Barala College.

17. Which of the following statements must be true?
 - (a) Dogra and Henri took training from Khatanama College.
 - (b) Indra took training from Barala College.
 - (c) Dogra and Falguni took training from Barala College.
 - (d) Indra took training from Abhiman College.
 - (e) Ballal took training from Abhiman College.
18. Which of the following can be true for the operators operating from 20:00 hrs (of January 05, 2009) to 00:00 hrs (of January 06, 2009)?
 - (a) Operators took training from Khatanama College and operate from Mangalore.
 - (b) Operators took training from Barala College and operate from Pune.
 - (c) Operators took training from Sutanama College and operate from Noida.
 - (d) Operators took training from Gutakal College and operate from Mangalore.
 - (e) Operators took training from Abhiman College and operate from Pune.
19. Which of the following statements must be true for the operator(s) trained in Gutakal College?
 - (a) They are Abdulla and Henri, and work from Jamshedpur.

- (b) They are Dogra and Falguni, and work from Pune.
 - (c) She is Eshita, and works from Mangalore.
 - (d) She is Indra, and works from Pune.
 - (e) They are Chandan and Ganguli, and work from Jamshedpur.
20. Which of the following is not definitely true?
- (a) At least three operators will be working between 04:00 hrs to 08:00 hrs.
 - (b) At most five operators will be working between 04:00 hrs to 08:00 hrs.
 - (c) At most five operators will be working between 12:00 hrs to 16:00 hrs.
 - (d) At most six operators will be working between 16:00 hrs to 20:00 hrs.
 - (e) At least three operators will be working between 16:00 hrs to 20:00 hrs.
21. If five operators are working between 16:00 hrs and 20:00 hrs, which of the following must be true?
- (a) The only operator working between 8:00 hrs and 12:00 hrs is Ballal.
 - (b) The operators working between 12:00 hrs and 16:00 hrs are Ballal, Dogra and Falguni.
 - (c) The operators working between 12:00 hrs and 16:00 hrs are Dogra, Henri and Falguni.
 - (d) The operators working between 16:00 hrs and 20:00 hrs are Indra, Dogra, Falguni, Chandan and Ganguli.
 - (e) The operators working between 20:00 hrs and 0:00 hrs are Chandan Ganguli and Eshita.
22. Dr. Puneet is worried about the test results of his patient, Ms. Benita. Ms. Benita was an old rich widow with no dependents. The results indicate that Ms. Benita has the potentially fatal Lymphangioleiomyomatosis (LAM) disease. LAM is rare and difficult to diagnose. People with LAM often need oxygen and lung transplants as the disease continues its course. According to the test results, Ms. Benita might have got it.
- Dr. Puneet explained the situation to Ms. Benita carefully. Without naming the disease, he explained that the disease was progressive and would need treatment using drugs which were still at the experimental stage. Even then, the chance of success was not too bright. If the treatment was unsuccessful, then they would have to get ready for a lung transplant. The lung transplant itself was a risky course of treatment. Even if successful, she would require constant medical support and treatment.
- Ms. Benita looked blank. She asks Dr. Puneet for his advice about the course of action. He nods gravely, 'I'm afraid, Ms. Benita, I think there is only one course we can take'.
- What should be Dr. Puneet's advice?**
- (a) Tell Ms. Benita the details of the disease.
 - (b) Conduct another test to confirm the diagnosis.
 - (c) Leave the matter; anyway the outcome cannot be changed.
 - (d) Treat Ms. Benita without telling her about the disease.
 - (e) Propose that Ms. Benita go ahead with the experimental drugs.

Read the following case and choose the best alternative (Question No. 23–26):

Guruji's guidance

Bhola, an avid nature lover, wanted to be an entrepreneur. He dreamt of establishing a chain of huts in Chatpur region to cater to tourists, who came attracted by the beauty and splendour of the Himalayas. However, he was appalled the current degradation of the Himalayan environment. He remembered the early times when everything was so green, clean and peaceful. Now, greenery was replaced by buildings, peace was shattered by honking of vehicles and flocking of tourists, and cleanliness was replaced by heaps of plastics.

Bhola had a strong sense of right and wrong. On speaking to a few locals about the issue, he realised that the locals were aware of these issues. However, they pointed out the benefits of development: *pucca* houses for locals, higher disposable income and with that, ability to send their children to better schools and colleges, better road connectivity, and access to latest technology in agriculture. Most locals wanted the development to continue.

Saddened by the lack of support from the locals, Bhola took up the issue with the government. He met the chief minister of the state to find out if government could regulate the developmental activities to prevent environmental degradation. However, the chief minister told Bhola that such an action would slow down the economic progress. That also meant loss of substantial tax revenues for the government.

Bhola needed to resolve the dilemma. Bhola always wanted to be an entrepreneur, who could contribute to the society and earn money as well. However, his business would also be responsible for destroying environment. If he did not set up his business, he would not be able to earn money and contribute to the society.

After mulling over the issues, he went to his mentor 'Guruji'. Guruji realised that it was really a difficult puzzle—if one saves the environment, there seems to be no development and if the people and the government sought development, the environment and hence future of this planet and human beings was at stake. After careful thought, he felt that dilemma could be resolved. He fixed up a meeting with Bhola to answer Bhola's queries.

23. Should Bhola still think of doing business?

- (a) Yes, where there is a will, there is a way.
- (b) No, saving the Earth for our children is more important than earning money.
- (c) Yes, Bhola should do business while ensuring no environmental damage is done.
- (d) Yes, but only if the government puts strict environment regulations in place.
- (e) Bhola should stop thinking about such a dilemma.

24. Bhola wanted to advise the government about the new tourism policy. Bhola had developed a few alternatives as given below. Choose the best alternative.

- (a) Stop environmental degradation by stopping the developmental activities.
- (b) Forget about the environment: think about the people as they are the vote banks for politician to come back to power.
- (c) Suggest that the government should try to promote eco-tourism, which would be controlled and regulated by the government, as the government could think about the welfare of the majority of the stakeholders.
- (d) Suggest that the government should promote eco-tourism with public private partnership

with the involvement of NGO's, so that there are checks and balances for inefficiencies and promotion for synergetic efforts between government and private entrepreneurs.

- (e) Involvement of impartial entities like NGO's who would provide a fair assessment of the policies.
25. Bhola wished he was heading the government. He listed five concrete measures he would take if he were to head the government. Choose the best alternative.
- (a) Charge environmental cess from all businesses operating out of the Himalayas.
 - (b) Charge cess from anyone who pollutes the environment, be it the citizens or industries and reward those who have contributed to afforestation the most.
 - (c) All profit making organisations have to take responsibility for afforestation proportionate to their profitability.
 - (d) Think about maximising the revenues and forget about the environment.
 - (e) Institute a *Green Valley Reward*, which would be given to businesses highly active in afforestation efforts.
26. Visualising he was heading the state government, Bhola thought of a likely problematic situation. Five years have passed. In these five years, Bhola has initiated a lot of pro-environment steps, including making people aware of the fact that it was this pristine environment which brought in tourists in the first place. Now he faced state elections. The opposition accused him of stopping development and causing unemployment under the guise of environment protection. If Bhola were to consider this accusation as a short-term battle, which option would Guruji suggest to Bhola to score a quick win?
- (a) Accuse the opposition of having vested interests as the opposition leaders were denied licences for opening new hotels.
 - (b) Point out the improvement in environment since the implementation of pro-environment policies.
 - (c) Compare the unemployment levels since the implementation of the pro-environment policies and if they are less, accuse the opposition of making baseless charges.
 - (d) Point out that this government had initiated a regular cleaning-up drive and the opposition did not consider the data regarding the people who were employed in that drive.
 - (e) Call the charges as baseless accusations being used to malign the good work he had done.
27. Some environmentalists tired of waiting for 'green economics' to catch up with the society at large, have adopted their own strategies for tipping the financial calculation in favour of the land. In the forest surrounding Vancouver, where trees are being felled for paper to print philosophy books (well, maybe one or two, but it's worth it), groups have used metal spikes hidden in trees to prevent the chainsaws from operating safely, pushing up the price of harvesting the trees. In Phoenix, Arizona, where mountain nature reserves have been encroached on by new houses, hooded vigilantes have burnt down the new residences. The arsonists, according to the local paper, pray before they burn down a house that no one will get hurt, thinking primarily of the fire-fighters, the new houses are burned while still empty.

‘We don’t pray for ourselves not to get caught, that’s God’s will.’ one is quoted as saying.

As per the activists, all aforementioned activities seem clearly very principled. But is it ethical?

- (a) Yes, arsonists are right.
- (b) No, they have no justification for damaging other people’s Property.
- (c) No, as it is not taken up in a peaceful manner.
- (d) No, as the activities are not carried out in a legal manner.
- (e) Stop thinking about ethics altogether as ethical issues are difficult to resolve.

Read the following case and choose the best alternative (Question No. 28–30):

Ranjan Tuglak, the youngest cabinet minister of the newly elected coalition, glanced through the notes prepared by his secretary regarding the recent controversies on *racket*, the most popular game of the country. While International Racket Association (IRC) has agreed to implement Drug Testing Code (DTC) promoted by World Athletic and Gamer Federation, Racket Club which controls the entire *racket* related activities (unlike any other sports and games of the country) had some reservations regarding the initiative. Majority of the citizens waited for the international competitions eagerly and were fanatical about their country’s participation in them. As a result of the popularity of the game 70% of the total revenue associated with the game originates from the country. Hence Racket Club has high bargaining power with IRC and can change any decision that is not aligned with its interests. Three most popular and senior players, including the captain, are against the application of DTC citing security reasons. A decision against the interests of these players may result in law and order problems throughout the country. Other players support the decision of their senior colleagues and if Racket Club refuses to agree, players may support Counter Racket Club, a new national level initiative. Counter Racket Club may threaten the monopoly of Racket Club, if it succeeds to attract some popular *racket* players.

Ranjan’s father had been forced to resign from politics due to alleged corruption charges. Ranjan had completed his entire education from abroad before returning to join politics. He is a great soccer player and has major reservations against *racket*. According to him, *racket* has negative influence on the country’s youth and diverts their attention from productive work. He also considers drug testing as an essential feature for any sports and games across the world. As the new cabinet minister for Youth and Sports he needs to take some important decisions on this controversial issue.

28. If the objective of Ranjan is to (i) create a good image of himself as a politician and (ii) create a long lasting positive impact, the best decision he should take is :
- (a) Force Racket Club to accept all modifications related to drug testing.
 - (b) Provide adequate security protection to the satisfaction of players nominated by Racket Club before enforcing drug testing.
 - (c) Align with Counter Racket Club.
 - (d) Popularise soccer in the country through endorsements by the popular *racket* players.
 - (e) Ban *racket*.
29. Identify the best rationale that may force Ranjan as a politician to take a decision in favour of IRC.

- (a) President of Racket Club and Ranjan belong to different political coalitions and he can use Counter Racket Club against the opponent.
 - (b) The next World cup is scheduled to be held in a country which has adopted DTC as the guiding principle.
 - (c) Ranjan is interested in reducing the popularity of *racket* in the country.
 - (d) As the cabinet minister, Ranjan has the power to take such a decision.
 - (e) Top three international teams (and respective national clubs) are keen to implement DTC.
30. According to DTC, each athlete/sportsperson needs to submit a schedule for three months (in advance) that specifies an hour each day when they can be randomly tested for drugs. DTC also assured the confidentiality of the submitted schedule by
- (i) limiting the access of player-supplied information to two senior officers,
 - (ii) these officers will have internet-based access only to the schedule of those sports persons who are randomly selected for testing (and not of everyone) and
 - (iii) introducing similar security features for DTC database as in case of financial institutions.
- Top three popular players realise that no reason other than security can help them to get a favourable decision from Ranjan. Hence during discussions they should focus on all options *except*:
- (a) Any clue related to their private schedules may also result in huge public gathering and it will make the job of security agencies very difficult.
 - (b) Popular *racket* players are included in the hit list of terrorist organisations.
 - (c) Recent report by World Bank rates their country among the top five nations with maximum amount of internet-based data stealing.
 - (d) It is difficult to provide adequate security coverage in large stadiums where *racket* is played.
 - (e) DTC is not willing to share the details of two senior officers involved in drug testing with the security agencies of the country for background study.

Analyse the following transcript (from the movie *Matrix*) and provide an appropriate answer for Questions 31 and 32 that follow.

Neo: Morpheus, what's happened to me? What is this place?

Morpheus: More important than what is when.

Neo: When?

Morpheus: You believe it's the year 1999 when in fact it's closer to 2199. I can't tell you exactly what year it is because we honestly don't know. There's nothing I can say that will explain it for you, Neo. Come with me. See for yourself. This is my ship, the *Nebuchadnezzar*. It's a hovercraft. This is the main deck. This is the core where we broadcast our pirate signal and hack into the Matrix. Most of my crew you already know.

(Next Scene: Construct)

Morpheus: This is the construct. It's our loading programme. We can load anything from clothing, to equipment, weapons, training simulations, anything we need.

Neo: Right now we're inside a computer programme?

Morpheus: Is it really so hard to believe? Your clothes are different. The plugs in your arms and head are gone. Your hair is changed. Your appearance now is what we call residual self image. It is the mental projection of your digital self.

Neo: This...this isn't real?

Morpheus: What is real? How do you define real? If you're talking about what you can feel, what you can smell, what you can taste and see, then real is simply electrical signals interpreted by your brain. ...This is the world that you know. The world as it was at the end of the twentieth century. It exists now only as part of a neural-interactive simulation that we call the Matrix. You've been living in a dream world, Neo.

This is the world as it exists today. Welcome to the Desert of the Real. We have only bits and pieces of information but what we know for certain is that at some point in the early twenty-first century all of mankind was united in celebration. We marvelled at our own magnificence as we gave birth to AI.

Neo: AI? You mean artificial intelligence?

Morpheus: A singular consciousness that spawned an entire race of machines. We don't know who struck first, us or them. But we know that it was us that scorched the sky. At the time they were dependent on solar power and it was believed that they would be unable to survive without an energy source as abundant as the sun. Throughout human history, we have been dependent on machines to survive. Fate it seems is not without a sense of irony. The human body generates more bio-electricity than a 120-volt battery and over 25,000 BTU's of body heat. Combined with a form of fusion the machines have found all the energy they would ever need. There are fields, endless fields, where human beings are no longer born, we are grown. For the longest time I wouldn't believe it, and then I saw the fields with my own eyes. Watch them liquefy the dead so they could be fed intravenously to the living. And standing there, facing the pure horrifying precision, I came to realise the obviousness of the truth. What is the Matrix? Control. The Matrix is a computer generated dream world built to keep us under control in order to change a human being into this

Neo: No. I don't believe it. It's not possible.

Morpheus: I didn't say it would be easy, Neo. I just said it would be the truth.

Neo: Stop. Let me out. Let me out. I want out.

31. The innate factor responsible for the status of human beings in the later part of 22nd century is
 - (a) due to human beings living in a dream world and being happy about it.
 - (b) the ability of human body to generate bio-electricity.
 - (c) the decision to scorch the sky.
 - (d) the development of artificial intelligence by human beings.
 - (e) due to human beings developing the ability to hack into the matrix.
32. Choose the option that cannot be inferred from the idea discussed in the transcript:
 - (a) Morpheus and his crew have developed an ability to hack into the matrix.
 - (b) A war between human beings and machines has been going on for some decades.
 - (c) The sources of power for human beings and machines were different.
 - (d) Machines require human beings for their survival now.

- (e) Morpheus and his crew are not entirely controlled by the matrix.
33. The widespread use of lectures in class-rooms in business schools leads to severe negative consequences. The first consequence is theoretically knowledgeable graduates who cannot apply theory to solve real world problems. The more serious consequence is that lectures encourage a feeling of total omniscience among them which persists for quite some time after graduating. This feeling prevents ‘them from learning from their subordinates and colleagues.’
- Which of the following can best help to reduce these negative consequences among the students in a business school?**
- (a) Use illustrations of real life problems in classrooms.
- (b) Send the students to find business problems so that it can be discussed in classrooms.
- (c) Business education to be given to students, who have work experience.
- (d) Modify the pedagogy to have knowledge of theory and application in parallel.
- (e) Removing theoretical inputs from the curriculum altogether; only practical problems to be discussed in class rooms.

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- (d) Modify the pedagogy to have knowledge of theory and application in parallel.
- (e) Removing theoretical inputs from the curriculum altogether; only practical problems to be discussed in class rooms.

Read the following passage and provide an appropriate answer for Questions 34 and 35 that

is especially and repetitively savage about what he sees as the extravagant claims made for the physics, arguing that once the proton, neutron, and electron were found and their properties experimentally confirmed, the very expensive searches for ever more exotic particles, such as the Higgs Boson, were increasingly harder to justify other than by their importance to particle physicists. Instead of the particles resemble ecstatic happiness: They are very short-lived and have nothing to do with everyday life. His repeated assault goes to the level of sarcasm: ‘Finding the Higgs Boson will be a magnificent technical and theoretical triumph. Like a great Bobby Fisher game’. Of course, this is unfair, even if some of the claims of its practitioners invite such assaults on their field.

34. Which of the following, if true, will weaken the argument described in the passage?
- (a) All streams of new science need to go through a period of uncertainty and we should not criticize research in particle physics alone.
 - (b) Necessity is the mother of every invention.
 - (c) Knowledge has preceded application in all spheres of science.
 - (d) Funding agencies supporting research on Higgs Boson do not mind wasting their money.
 - (e) Do not expect everyone to appreciate everything.
35. Identify the statement(s) that is(are) logically consistent with the content of the paragraph.
- I. Silver is an ardent critic of Higgs Boson theory.
 - II. Everyday life has nothing to do with experimental confirmation of the properties of proton, neutron and electron.
 - III. Identifying more information about Higgs Boson is a significant contribution to particle physics.
 - IV. Research on exotic particles in particle physics is an expensive proposition.
- (a) Only I (b) Only II

- (c) Only II and IV (d) Only IV
(e) Only I and IV

Analyse the following passage and provide an appropriate answer for questions 36–38 that follow.

When we speak of the ‘probability of death’, the exact meaning of the experience can be defined in the following way only. We must not think of an individual, but of a certain class as a whole, eg., ‘all insured men forty-one years old living in a given country and not engaged in certain dangerous occupations.’ A probability of death is attached to the class of men or to another class that can be defined in a similar way. We can say nothing about the probability of death of an individual even if we know his condition of life and health in detail. The phrase ‘probability of death’, when it refers to a single person, has no meaning at all.

36. Which of the following conclusions can be drawn from the passage?

1. Singular, non replicable events can be assigned numerical probability value.
2. Probability calculation requires data of the class of people or of events.
3. The data about a class of events can be used to predict the future of any specific event.

- (a) 1 only (b) 2 only
(c) 1 and 2 (d) 2 and 3
(e) 1 and 3

37. Which of the following statements would the author(s) disagree to the most?

The outcome of a boxing match to be held in Los Angeles between two boxers, Joe and Mark belonging to two different boxing clubs can be analysed and an outcome can be assigned a numerical value:

- (a) if assessment of the boxers’ current fitness levels and their strengths is done by experts.
- (b) by analysis of outcomes of the fights between the boxers belonging to the two clubs.
- (c) by analysis of the outcomes of the fights between the two boxers at different venues.
- (d) by comparing of the outcomes of the fights between the two boxers against same opponents.
- (e) by analysis of outcomes of fights between the two boxers at the same venue in Los Angeles.

38. Which of the following statements would the author(s) agree to the most?

The outcome of a boxing match to be held in Los Angeles between two boxers, Joe and Mark belonging to two different boxing clubs can be analysed and an outcome can be assigned a numerical value:

- (a) if assessment the boxers’ current fitness levels and their strengths is done by experts.
- (b) by analysis of outcomes of fights between the boxers belonging to the two clubs.
- (c) by analysis of outcomes of the fights between the two boxers at different venues.
- (d) by comparing the outcomes of the fights between the two boxers against same opponents.
- (e) by analysis of outcomes of fights between the two boxers at the same venue in Los Angeles.

39. 'The sum of behaviour is to retain a man's dignity without intruding upon the liberty of others', stated Sir Francis Bacon. If this is the case, then not intruding upon another's liberty is impossible.

The conclusion strongly implied by the author of the passage is:

- (a) Retaining one's dignity is impossible without introducing upon another's liberty.
 - (b) Retaining dignity does not necessarily involve robbing other's liberty.
 - (c) Dignity and liberty are mutually exclusive.
 - (d) There is a ways the possibility of a 'dignified intrusion'.
 - (e) Retaining dignity never involves intrusion into other's liberty.
40. Gourmet is to gourmand as
- (a) aquatic is to aqueduct
 - (b) foliage is to fodder
 - (c) ecclesiastic is to earthy
 - (d) election is to elector
 - (e) epitaph is to epilogue
41. 'Indigestion? Acidity? Unable to sleep?...Don't spend the time tossing and turning! Take Magix for a sound, restful sleep... you'll soon fall asleep, and wake up refreshed and energised. Remember ... Magix when you are suffering from acidity and need that sleep!'

All of the following are claims of *Magix* except :

- (a) A good night's sleep
 - (b) Added energy
 - (c) A cure to indigestion
 - (d) Quickly falling asleep
 - (e) A restful slumber
42. Filmmakers tend to highlight their emotional points with visuals, rather than dialogue. Words tend to be the tools of playwrights. Images are the stuff that films are made of. Nevertheless, many successful films have been made from stage plays and contain little else than one location or one stage set.

The option most opposite to the idea in the paragraph:

- (a) Films are not necessarily a filmmaker's medium.
 - (b) Films are not limited to any one particular style.
 - (c) Films are solely built upon visual and eye- catching scenes.
 - (d) Films are better made by playwrights and novelists.
 - (e) Films perhaps are better understood by literary critics.
43. Unlike other retail outlets, where items are purchased in any number of units the customer wants, in super-markets items are grouped in bulk packages. This bulk buying offers savings to the customer. The option to buy at wholesale prices by buying in bulk makes super-markets a practical choice for budget-conscious consumers.

Which of the following is an assumption necessary to the author's argument?

- (a) Super-markets often have great buying power and lower overhead costs, so they can offer a greater variety of products than regular retail outlets.
- (b) Super-markets are often more conveniently located and have better parking facilities.
- (c) The emergence of super-markets has caused many small retail stores to close down and thus eliminate competition.
- (d) It is economically wise to buy single items since bulk passages seldom offer significant savings.
- (e) The financial savings from purchasing bulk packages may outweigh the inconvenience of being unable to purchase in any number of units that suits the customer needs.

Answer Key

1. (d)	2. (b)	3. (e)	4. (a)
5. (b)	6. (b)	7. (b)	8. (c)
9. (c)	10. (d)	11. (a)	12. (a)
13. (d)	14. (e)	15. (c)	16. (d)
17. (b)	18. (c)	19. (a)	20. (b)
21. (e)	22. (b)	23. (c)	24. (d)
25. (b)	26. (c)	27. (b)	28. (b)
29. (b)	30. (d)	31. (d)	32. (b)
33. (d)	34. (c)	35. (e)	36. (b)
37. (b)	38. (a)	39. (a)	40. (b)
41. (c)	42. (c)	43. (e)	

Solutions:

Solutions for Questions 1 to 3: The first two clues about Gabino and Daffy can be read as follows and they lead to the conclusions as listed below:

CLUE 1: If Gabino is kept in Pen 1, Daffy is also kept in Pen 1.

CLUE 2: If Daffy is kept in Pen 1, Gabino is kept in Pen 1.

While interpreting these two clues together, you should realise that together they mean that if you were to keep one of the two in Pen 1, you would essentially need to put both in Pen 1.

Thus, if you keep one of them in Pen 2, the other would also be in Pen 2 (because if you were to put the second person in Pen 1, then the first person cannot remain in Pen 2).

In the same fashion we can try to interpret the clues about Ashlen and Blakeley:

The third clue can be read as:

CLUE 3: If Ashlen is kept in Pen 2, then Blakeley has to be put in the other Pen (i.e. Pen 1)

CLUE 4: If Blakely is kept in Pen 1, then Ashlen is kept in Pen 2.

The way you need to think from this point is: What if you put Blakeley in Pen 2? Where would Ashlen go? By clue 3, Ashlen would necessarily need to go into Pen 1 (because if you were to put Ashlen in Pen 2 too, then clue 3 's basic condition kicks in and Blakeley would have to be put into Pen 1, but he has been placed in Pen 2; hence you are not really allowed to put Ashlen in Pen 2, if Blakeley is in Pen 2).

Thus, what both these clues together are telling us is that Ashlen and Blakeley have to be put into different Pens.

Armed with these two realisations we are now ready to look into the individual questions of the set.

1. Before we look at the options for who can be feasibly placed in Pen 2, you should remember the two conclusions we have drawn above and how they work in the given situation.
 - (i) Gabino and Daffy have to be in the same Pen. This means that either we put both of them in Pen 2 or we put neither of them in Pen 2.
 - (ii) Ashlen and Blakeley have to be put in different Pens. This means that one of Ashlen and Blakely have to be put in Pen 2.

Now let us move into the individual options in order to check the feasibility of each option and check for a possible arrangement of 4 puppies in Pen 2.

- Option (a): **Rejected** because neither Ashlen nor Blakeley is part of Pen 2.
- Option (b): **Rejected** because both Ashlen and Blakely are part of Pen 2.
- Option (c): **Rejected** because we have only Gabino and Daffy is not in the same Pen as Gabino.
- Option (d): **Possible** as we have kept Ashlen and Blakeley in different Pens, while at the same time both Gabino and Daffy are in Pen 1. Hence, this arrangement is correct.
- Option (e): **Rejected** as Gabino and Daffy are being kept in different Pens in this arrangement.

Hence, option (d) is the correct answer.

2. If Earl and Fala are sharing a pen, they could either be sharing Pen 1 or Pen 2. This should be recognised as a multiple possibility situation and while considering what ‘MUST BE TRUE’ in such case, you have to look at what is consistently true in both the possibilities.

Hence, in order to move forward in this case, you need to first look at the allocations of the 7 puppies in both possibilities and then see what is consistently true.

POSSIBILITY 1: If Earl and Fala share Pen 1, the allocations would be:

Pen 1

Earl	Fala	Ashlen/Blakeley (any one of them)

Pen 2

Daffy	Gabino	Custard	Blakeley/ Ashlen (the other one as per who has been allocated to Pen 1)

POSSIBILITY 2: If Earl and Fala share Pen 2, the allocations would be:

Pen 2

Earl	Fala	Custard	Blakeley/ Ashlen (any one of them)

Pen 1

Daffy	Gabino	Ashlen/Blakely (the other one as per who has been allocated to Pen 2)	

From the above two possible allocations and looking at the options we can select option (b) i.e., Custard is in Pen 2 as we can see clearly that in both allocations Custard is in Pen 2.

If you look at the other options, the following thought chains should result:

Option (a): Can be true but not necessarily true as this is not occurring in Possibility 1.

Option (c): Need not be true as can be seen under Possibility 2.

Option (d): Need not be true as Earl is in Pen 2 in Possibility 2.

Option (e): Not necessary as we can put even Ashlen with Gabino

Hence, Option (b) is correct.

3. Earl and Fala being in different Pens is also leading to a multiple possibility situation as follows:

Possibility 1: Earl is in Pen 1, Fala is in Pen 2;

Possibility 2: Earl is in Pen 2, Fala is in Pen 1.

Let us explore each of the possibilities further:

Possibility 1: Earl is in Pen 1, Fala is in Pen 2;

Pen 1

Earl	Custard	Ashlen/Blakely (any one of them)	

Pen 2

Daffy	Gabino	Fala	Blakeley/ Ashlen (the other one as per who has been allocated to Pen 1)

Possibility 2: Earl is in Pen 2, Fala is in Pen 1;

Pen 1

Custard	Fala	Ashlen/Blakely (any one of them)	

Pen 2

Daffy	Gabino	Earl	Blakeley/ Ashlen (the other one as per who has been allocated to Pen 1)

Now for this question, we are trying to look for what ‘MUST NOT BE TRUE’ which in essence means that we are looking for what cannot happen under both possibilities. Thus, if something can be seen to occur in one of the two possibilities also, it would be rejected as an

answer to this question.

Checking the options from this point of time:

Option (a): Can be true under possibility 2. Hence, this option is rejected.

Option (b): Can be true under both possibilities. Hence, this option is rejected.

Option (c): can be true under possibility 2. Hence, this option is rejected.

Option (d): Can be true under possibility 2. Hence, this option is rejected.

Option (e): Cannot be true under either possibility as we can see clearly that in both the possibilities, Custard is always in Pen 1. Hence, we cannot put Custard in a higher numbered pen than Fala.

Hence, option (e) is the correct answer.

Solutions for Questions 4–6:

4. It is clearly mentioned in the situation description that reduced passenger load (as a result of increased prices) and rising ATF prices (forcing airlines to raise prices) are both responsible for Jet Airways not doing well. Hence, option (a) is the correct answer.

5. The losses of Jet Airways (as mentioned in the paragraph) are in the range of ` 3000 Crore. Also, the losses of Air India are in the range of Rs.10 crore per day, which means an annual loss of approximately ` 3650 crore. Consequently, the losses of other airlines would be $10000 - 3000 - 3650 = \text{` } 3350 \text{ crore}$.

Hence, option (b) is correct.

6. Reducing prices would definitely increase passenger load factors, but whether it would put the airlines in a better situation would depend on so many factors, not the least of which are: The amount by which the prices are reduced; The effect on the profitability per passenger mile if the prices are reduced; The actual elasticity of demand which would determine how much of an effect the reduction in prices would create on the passenger load factors etc. From the information given in the passage, we are not in a position to estimate these variables and hence, we really cannot say whether reducing prices would put the airlines in a worse or a better situation.

Hence, the correct answer to this question would be that we do not have enough information to reach a decision.

Option (b) is the correct answer.

Solutions for Questions 7–11:

Like in all reasoning questions, the first thing we do is to make a grid which would help us encapsulate all the information in one consolidated grid.

The given information tells us about: i) The order of finding the correct word; ii) The person who found the word; iii) The exact words found and iv) The position of the word in the grid.

Hence, the ideal grid structure would look as follows:

Order	First	Second	Third	Fourth	Fifth
Who					

Which Word					
Position of Word on Crossword					

With this grid structure, you can try to start fitting in the clues into the grid. In this case, a quick reading shows us clearly that most of the clues in this question set are extremely indirect. Hence, in such a question the standard approach to solve has to be to go through multiple rounds of visiting the clues in the order they are given and continuously trying to add more and more information into the solution grid we have.

FIRST PASS THROUGH THE CLUES:

When you read the first clue, you realise that you need to look at the number of letters in the words. There are two words with 6 letters each, two words with 7 letters each and 1 word with 8 letters. Also there are 3 across clues and 2 Down clues in the crossword.

Clues 2 to 4: Not usable at this point.

Clue 5: Barely was the first word to be inserted & Clue 7: Fifth one to be worked out is an across clue gives us the following grid:

Order	First	Second	Third	Fourth	Fifth
Who					
Which Word	Barely				
Position of Word on Crossword					Across

At this point clue 1 become usable in the following fashion:

If Titli has produced an answer which has the same number of letters as the previous answer and one more than the next answer, it could only mean that Titli produced a 7 letter word as only a 7 letter word can feasibly have the same number of letters in the previous word and have 1 letter more than the next word given the current situation—i.e. there are 2 words with 6 letters each, 2 with 7 letters each and 1 with 8 letters.

Thus, there is a sequence of words with 7 letters, 7 letters and 6 letters in that order somewhere in the above grid.

This principally means that Titli’s word can either be placed third or fourth in which case the alternate grids can be imagined as follows:

Titli’s word: third

Order	First	Second	Third	Fourth	Fifth
Who			Titli’s Word	One of the Men	
Which Word	Barely	7 Letter Word	7 Letter Word	6 Letter Word	
Position of Word on Crossword			8 Across		Across

OR Titli’s word: fourth

Order	First	Second	Third	Fourth	Fifth
Who				Titli's Word	One of the Men
Which Word	Barely	Silence	7 Letter Word	6 Letter Word	8 Letter Word Baadshah
Position of Word on Crossword	Down	Across	8 Across	Down	Across

However, the second of the situations above can be rejected as it means necessarily putting the 8 letter word ‘Baadshah’ in the second place—something that is a contradiction of clue # 5. Hence, we can reject the possibility of Titli’s word being 4th and can conclude that Titli’s word is the third one. We can also now determine the exact position of the word ‘SILENCE’ using clue # 4. Thus, the grid would now look as below:

Order	First	Second	Third	Fourth	Fifth
Who			Titli's Word	One of The Men	
Which Word	Barely	Silence	7 Letter Word	6 Letter Word	8 Letter Word
Position of Word on Crossword	Down	Across	8 Across	Down	Across

The next part of the thought process would involve the following deductions:

- (i) We already know the exact position of BARELY, thus the second 6 letter word BURDEN, would move into the 4th position;
- (ii) The only 7 letter word left is ROSEBUD and it would get fixed in the third place.
- (iii) From Clue 2 we know that Mr. Bineet did not solve ‘BURDEN’. Since a man has solve BURDEN, we can conclude that it must have been Easwar.

At this point in our solution, we know the order in which each of the words were solved. Our solution grid looks as below.

Order	First	Second	Third	Fourth	Fifth
Who			Titli's Word	Easwar	
Which Word	Barely	Silence	Rosebud	Burden	Baadshah
Position of Word on Crossword	Down	Across	8 Across	Down	Across

Our concentration now should obviously be to move onto the remaining clues and fill in the WHC row and also the position of each word in the crossword. The following deductions help you move on in the solution:

- (i) Clue # 6 gives us that Sheela has to be second, and since Elsie’s word was longer than Bineet’s it can only mean that Elsie deduced BAADSHAH and Bineet got BARELY. The WHO row of the grid gets completed and we reach the following situation.

Order	First	Second	Third	Fourth	Fifth
Who	Bineet	Sheela	Titli's Word	Easwar	Elsie

Which Word	Barely	Silence	Rosebud	Burden	Baadshah
Position of Word on Crossword	Down	Across	8 Across	Down	Across

Now our focus shifts to the Downs and Across positions of the words. The following deductions get you to the final grid.

- (i) Easwar did not solve 4 Down; hence he solved 15 down and 4 down has to be the first word BARELY;

Order	First	Second	Third	Fourth	Fifth
Who	Bineet	Sheela	Titli’s Word	Easwar	Elsie
Which Word	Barely	Silence	Rosebud	Burden	Baadshah
Position of Word on Crossword	Down	Across	8 Across	15 Down	Across

We do not have further information to determine which word is 15 Across and which is 21 across between SILENCE and BAADSHAH

The answers can be read off from the above table:

7. Sheela’s word was SILENCE. Option (b) is correct.
8. Titli’s answer is ROSEBUD. Option (c) is correct.
9. Titli’s order was third. Option (c) is correct.
10. Easwar’s number was 15 down. Option (d) is correct.
11. Bineet’s word was BARELY. Option (a) is correct.

Solutions for Questions 12 and 13:

The pivotal statement amongst the given 9 statements is Samuel’s statement. If his statement is true, it is clear that in such a case ‘exactly three statements amongst the nine would be true’ and consequently the other six would be false.

With this basic understanding of the situation, we can have a look at the individual questions in the set.

12. Given that Samuel is telling the truth. In such a case, 3 out of the nine statements have to be true. One of the three obviously has to be of Samuel himself (as he is one of the 9 suspects). We need to think about how the other two true statements can be identified in this case. While doing so we can also take the help of the options to check which of the options fits the given situation.

Checking for option (a): If Chaudhary and Datta are telling the truth: it means that the following conditions would be inserted as true into the problem situation.

- i. The accounts were fudged by Datta (according to Chaudhary’s statement);
- ii. Shrinivas did not fudge the accounts. (according to Datta’s statement being true).

Thus, for false statements we are looking for any of the following conditions:

- (a) Anybody who says ‘Samuel is lying’; ‘Chaudhary is lying’ or ‘Datta is lying’ would be lying himself in this case.

- (b) Anybody saying 'Datta did not fudge the accounts' is lying.
- (c) Anybody saying 'Shrinivas fudged the accounts' is also lying.
- (d) Anybody saying 'X is telling the truth' where X is neither Samuel, nor Chaudhary nor Datta would also be lying.
- (e) Anybody saying 'X fudged the accounts' where X is not Datta would also be lying.

With this basic understanding if we were to look at the individual statements we need to see if we can prove that 6 statements are false in this case. Let us evaluate each of the statements in this case:

Shrinivas: Has to be false based on condition (e) above;

Nagraj: Has to be false based on condition (a) above;

Jose: Has to be false based on condition (d) above;

Ejaz: Has to be false based on condition (a) above;

Ganeshan: Has to be false based on condition (a) above;

Panda: Has to be false based on condition (a) above.

Thus, in this situation we are able to find 6 false statements and this option has to be correct.

Just for your understanding we can take another option and test it to see (and to illustrate to you) how an option would get rejected under this situation.

Let us say we are testing for option (b): Nagraj fudged the accounts. Let us see what chain of thought this leads to if we take this option to be true.

Thus, for false statements we are looking for any of the following conditions:

- (a) Anybody who says 'Samuel is lying' would be lying himself in this case.
- (b) Anybody saying 'Nagraj did not fudge the accounts' is lying.
- (c) Anybody saying 'X is telling the truth' where X is not Samuel or anybody else who is proven to be true based on the above situation would also be lying.
- (d) Anybody saying 'X fudged the accounts' where X is not Nagraj would also be lying.

At the same time anyone saying 'Nagraj fudged the accounts' has to be true. Also, anybody saying 'X did not fudge the accounts' where X is not Nagraj is also true.

With this basic understanding if we were to look at the individual statements we need to see if we can prove that 6 statements are false in this case. Let us evaluate each of the statements in this case:

Shrinivas: Has to be true;

Datta: Saying that Shrinivas did not fudge the accounts would be true in this case;

Nagraj: Has to be false since Datta is true;

Jose: Has to be true because we can see that Shrinivas is actually true in this case.

Also, since Samuel is already known to be telling the truth, we can see that there is an internal contradiction that the situation is throwing up for us. This contradiction is that in this chain of thought we already have 4 people telling the truth which makes Samuel's statement false-which cannot happen because we are told that Samuel is telling the truth.

If you check the other options (c), (d) and (e) based on a similar logic string you would

realise that each of these options leads to a similar situation where there would be an internal contradiction like the one shown above. Option (a) would be the only one which does not show an internal contradiction.

The following thought processes would show you why options (c), (d) and (e) have internal contradictions:

Checking option (c): Chaudhary and Jose are telling the truth. it means that the following conditions would be inserted as true into the problem situation.

- (i) The accounts were fudged by Datta (according to Chaudhary's statement);
- (ii) Shrinivas is telling the truth. (according to Jose's statement).

However, if Jose's statement is true, so will be Shrinivas's statement and we get an internal contradiction as 4 people are telling the truth, viz: Shrinivas, Jose, Chaudhary and Samuel.

Hence, option (c) gets rejected.

Checking option (d): Shrinivas and Datta are telling the truth; it means that the following conditions would be inserted as true into the problem situation.

- (i) The accounts were fudged by Nagraj (according to Shrinivas's statement);
- (ii) Shrinivas did not fudge the accounts. (according to Datta's statement).

Then checking each of the other statements we get:

Nagraj: false as he says that Datta is lying;

Jose: True as he is saying that Shrinivas is true.

This again leads to an internal contradiction as Samuel's statement says that there are 3 people who are telling the truth but in this situation we already have 4 people who are coming out to be true (viz: Shrinivas, Datta, Jose and Samuel).

Hence, option (d) gets rejected.

Checking option (e): Shrinivas fudged the account $\wedge$ Datta is lying $\wedge$ Nagraj is true, Ejaz is true and Ganeshan is true as they are all saying that Datta is lying $\wedge$ Internal contradiction as we again have 4 people telling the truth (Nagraj, Ejaz, Ganeshan and Samuel).

Hence, option (e) is also rejected.

Thus, option (a) is the correct answer.

13. If Panda is lying it means that Samuel is telling the truth which again gets us back to the situation as described in question 7. We have already solved that situation and seen that in such a case Samuel, Datta and Chaudhary are telling the truth.

In such a case: Datta has fudged the accounts.

Testing each of the options, option (a), (b), (c) and (e) can all be true and in fact are all true.

The statement in option (d) which states 'Jose and Shrinivas are telling the truth' cannot be true since we already know the three people who are telling the truth as Chaudhary, Datta and Samuel.

Hence, option (d) is the correct answer.

Solutions for Questions 14–16:

From a first reading of the question we get the following grid structure to connect:

(i) Day; (ii) Band name; (iii) Lead vocalist name

Day	Band	Lead Vocalist	Type of Band Rock/Fusion
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

Once we have the above grid, we can read through the information provided in the clues to see which ones fit in at this point of time.

A quick glance at the information and the way it is presented clearly hints at the following which can be fitted directly:

- (i) The performance of Bodhi Tree, the home band of XLRI did not precede the performance of any band—Means Bodhi Tree should be on Sunday;
- (ii) Sid, the lead vocalist of the rock band Cactus could only perform on MondayÆ Rock Band Cactus and Sid should be on Monday;
- (iii) Rupam, the only male among the lead vocalists of the fusion bands, was with Fish and performed on Wednesday Æ Rupam, Fusion band Fish, Wednesday

Inserting this information into the grid would give us the following picture:

Day	Band	Lead Vocalist	Type of Band Rock/Fusion
Monday	Cactus	Sid	Rock
Tuesday			
Wednesday	Fish	Rupam	Fusion
Thursday			
Friday			
Saturday			
Sunday	Bodhi Tree		

The other bands are Axis, Enigma, Dhoom, Boom and the other lead vocalists are Angelina, Bony Ali and Meet.

From this point we can make further deductions:

- (i) Since, Rupam is the only male lead vocalist for a fusion band, the two women lead vocalists

(viz: Angelina and Bony) should be leading fusion bands. Thus, Angelina’s Enigma is a fusion band. Thus, Ali and Meet would be leading rock bands.

- (ii) Rock Band Boom is either on Friday or Saturday as it refuses to perform immediately before or after Fish;
- (iii) Angelina’s Enigma cannot be after Thursday— means she is either on Tuesday or Thursday;

Based on the possibilities of placing Enigma on Tuesday/ Thursday and Boom on Friday, Saturday the following four possibilities emerge. Keep in mind that we cannot have three consecutive days of either fusion bands or of rock bands while making these possibility grids.

Possibility 1:

Day	Band	Lead Vocalist	Type of Band Rock/ Fusion
Monday	Cactus	Sid	Rock
Tuesday		Ali/Meet	Rock
Wednesday	Fish	Rupam	Fusion
Thursday	Enigma	Angelina	Fusion
Friday	Boom	Meet/Ali	Rock
Saturday		Bony	Fusion
Sunday	Bodhi Tree		

Possibility 2: Not possible as it gives 3 consecutive days of Fusion.

Day	Band	Lead Vocalist	Type of Band Rock/ Fusion
Monday	Cactus	Sid	Rock
Tuesday			
Wednesday	Fish	Rupam	Fusion
Thursday	Enigma	Angelina	Fusion
Friday			
Saturday	Boom		Rock
Sunday	Bodhi Tree		

Possibility 3:

Day	Band	Lead Vocalist	Type of Band Rock/ Fusion
Monday	Cactus	Sid	Rock
Tuesday	Enigma	Angelina	Fusion
Wednesday	Fish	Rupam	Fusion

Thursday		Ali/Meet	Rock
Friday	Boom	Meet/Ali	Rock
Saturday		Bony	Fusion
Sunday	Bodhi Tree		

Possibility 4:

Day	Band	Lead Vocalist	Type of Band Rock/ Fusion
Monday	Cactus	Sid	Rock
Tuesday	Enigma	Angelina	Fusion
Wednesday	Fish	Rupam	Fusion
Thursday		Ali/Meet	Rock
Friday		Bony	Fusion
Saturday	Boom	Meet/Ali	Rock
Sunday	Bodhi Tree		

From these solutions, as we have already seen possibility 2 is rejected because it creates 3 days consecutive for fusion bands. Possibilities 3 and 4 are also rejected since Meet refuses to perform after Angelina and in both possibilities 3 and 4, Meet is necessarily performing after Angelina. This leaves us with only possibility 1, with the further evolution that Meet cannot be after Angelina, hence he cannot be on Friday. So the solution gird becomes as below:

Day	Band	Lead Vocalist	Type of Band Rock/ Fusion
Monday	Cactus	Sid	Rock
Tuesday		Meet	Rock
Wednesday	Fish	Rupam	Fusion
Thursday	Enigma	Angelina	Fusion
Friday	Boom	Ali	Rock
Saturday		Bony	Fusion
Sunday	Bodhi Tree		

From this table, we can solve the questions in the set:

14. Option (e) cannot be true because Meet cannot be the lead vocalist of Boom. Hence, option

(e) is the correct answer.

15. From the table above we know that Boom performed on Friday and Meet performed on Tuesday. Option (c) must be true and is the correct answer.
16. The only unknowns in the above solution grid is/are when Axis and Dhoom are performing (between Tuesday and Friday). The other four bands are already fixed in terms of the day on which they perform. Option (d) places Axis on Tuesday and Dhoom and is a plausible sequence of performances.

Hence, option (d) is the correct answer.

Solutions for Questions 17–21:

Based on an initial reading of the situation, you realize that the variables in the question is/are:

- (i) Operator name;
- (ii) Starting Time;
- (iii) College Name;
- (iv) College location;

Based on this identification of the variables, the starting grid would be:

Starting Time	Ending time	College Name	City	Operators
00:00	8:00			
04:00	12:00			
08:00	16:00			
12:00	20:00			
16:00	24:00			
20:00	04:00			

If we use the direct clues given in the question, we have the following given directly to us:

- (i) Operator(s) from Jamshedpur start at 00:00 hours;
- (ii) Operator(s) from Abhiman College start at 12:00 hours;
- (iii) No operator(s) will start at 20:00 hours

With the use of these clues, the grid changes to:

Starting Time	Ending time	College Name	City	Operators
00:00	8:00		Jamshedpur	
04:00	12:00			
08:00	16:00			
12:00	20:00	Abhiman College		
16:00	24:00			

20:00	04:00	Nil	Nil	Nil

After this point, there is no clue that can go directly into the above table at this stage. Hence, we can first concentrate on collating the clues linking College-city-operator(s) names

Given that Indra does not come from Mangalore and Jamshedpur; Also, since she works alone she cannot be one of the operators from Noida; and she is not part of the Pune team as given (that of Dogra and Falguni). Hence, she must necessarily be from Hyderabad. Also, it is given that the operator(s) trained in Barala College are from Hyderabad Æ Indra-Hyderabad-Barala College;

Also, Dogra and Falguni-Pune (given)-Not Gutakal College;

Abdullah and Henri—cannot be Pune and Hyderabad as these are already allocated; cannot be part of the 3 member team from Noida and they are not from Mangalore. Thus, they are from Jamshedpur.

Further we know that the number of operators from Barala = number of operators from Khatanama College Æ which in essence means that since there is only 1 person from Barala, there would be only 1 person from Khatanama College.

We also now know that one group from Noida has 3 operators; the groups from Pune and Jamshedpur have 2 operators each, hence the groups from Hyderabad and Mangalore would be the only two groups having exactly 1 person.

Besides, we know that Ballal is alone from his location. Since we already know that Indra is alone from Hyderabad, Ballal must be from Mangalore and he must be from Khatanama college. Thus, we know for sure that: Ballal-Mangalore-Khatanama should be one row in the grid.

You can also deduce at this point that the three member team from Noida would be Abdulla, Ganguli and Chandan and also that they are from Sutanama College.

If you look at the grid with the above deductions you would realise that since Barala-Hyderabad-Indra and Khatanama-Mangalore-Ballal & Sutanama-Noida-Eshita, Ganguli and Chandan have to fill the three blank rows (blank in terms of College name, City and Operators), Gutakal College would be at Jamshedpur and Abhiman college would be at Pune

If you put all this information into the grid, the grid becomes:

Starting Time	Ending time	College Name	City	Operators
00:00	8:00	Gutakal College	Jamshedpur	Abdullah and Henri
04:00	12:00	Khatanama College	Mangalore	Ballal
08:00	16:00			
12:00	20:00	Abhiman College	Pune	Dogra and Falguni
16:00	00:00			
20:00	04:00	Nil	Nil	Nil

The only thing which is not certain at this point of time is where to place Sutanama-Noida-Eshita, Ganguli and Chandan & where to place Barala-Hyderabad-Indra between 08:00 start and 16:00 start.

The answers can be read off the table:

17. We have already identified that Indra is from Barala College. Hence, Option (b) is correct
18. Since nobody starts at 20:00 hours, the only operator(s) operating at 20:00 hours would be the one who started at 16:00 hours. We know that it could be either Indra or the group from Noida.
Option (c) is the correct answer.
19. The Gutakal College operators are Abdullah and Henri, and they operate from Jamshedpur
Option (a) is correct.
20. If Chandan, Eshita and Ganguli all started at 04:00 there would be 6 people working between 04:00 to 08:00. Note, if you do not take this interpretation then none of the options in this questions match. Thus, with this interpretation it is not necessary that the number of people working between 04:00 to 08:00 would be at most five.
Option (b) is the correct answer.
21. If there are exactly five operators working between 16:00 to 20:00 it means that the Noida group started working at 16:00 hours. Hence, between 20:00 to 00:00, the Noida group would be working alone, i.e. Chandan, Eshita and Ganguli would be working alone between 20:00 to 00:00.
Option (e) is the correct answer.
22. In the first paragraph it is clearly stated that Ms. Benita ‘might have got’ LAM. Clearly, the first thing the doctor should do is to confirm the diagnosis by conducting another test. Option (b) is the correct answer.
23. The most logical solution to the dilemma in this case is that Bhola should do his business, without damaging the environment. In case there is damage to the environment in the course of doing his business, he should make sure that he minimises his impact and compensates for the damage by taking pro-environmental steps (as is the norm). This is called sustainable development, worldwide people do not stop doing business, neither do they stop thinking about the environment.
The closest option to the ideal course of action in this case is is the third option.
Hence, option (c) is correct.
24. Promotion of eco-tourism for improving the tourism in the region would be an attractive step to generate business revenues as well as ensuring the well being of the people involved.
Hence, we have to choose between options (c) and (d). Between these two, option (d) is better because, it talks about the involvement of all stakeholders (including NGO’s etc) to create the right checks and balances in the system.
Hence, option (d) is correct.
25. Option (b) is the most logical step to take in this situation as it rewards the people who are doing good for the environment and penalises those who are harming it. Hence, it creates an incentive for people to take care of the environmental concerns. At the policy level, that is the main role the government should take.
Hence, option (b) is correct.
26. The attack the opposition is making on Bhola’s governance is centered on his ‘anti-

developmental' stance leading to 'unemployment' which causes hardships to people. The most appropriate response against this attack would be obviously to show that unemployment rates have not actually gone up due to the implementation of the pro-environmental policies. In fact, if unemployment can be shown to have dropped down under the pro-environmental policies of his government, it would be a much better rebuttal of the attack on the policies.

Option (c) talks about this exact logic and hence is the correct answer.

27. The activities of the arsonists are clearly not ethical. Hence, the correct answer has to be amongst options (b), (c) or (d). Options (a) and (e) can be rejected because (a) agrees that the actions are ethical, while (e) does not answer the question at all. (The question asks whether the arsonists' activities are ethical which elicits a yes or no response; option (e) does not answer the question either through yes or no).

Amongst Option (b), (c) and (d), option (b) is the strongest because damaging other people's property can never be ethical and can never have any justification. Hence, option (b) is correct.

28. Since Ranjan has two objectives, his course of action should meet both the objectives for him. If we now consider each of the options as his course of action:

Option (a) would present him as a dictatorial politician and hence would not be good for his image; Option (c) and (e) would not be popular decisions for him as the country is passionate about racket and anybody going against the sport in general and the top stars of the sports in particular would not be creating a good image for himself. Option (d) sidesteps the main issue at hand and hence is not the correct way to go if he wants to create a lasting impact.

Option (b) would ensure that he gets the sympathy of the top racket playing stars, thus creating a good image for himself and also create a lasting positive impact as it solves the issue at hand.

Hence, option (b) is the correct answer.

29. If the next world cup is in a country that has adopted the DTC, there might be a danger that a country not adopting the DTC would not be allowed to participate in the world cup. This would lead to various negative ramifications in the country as the fanatical fans might not take it too well. Hence, in such an event, Ranjan would be forced to take a decision in favour of IRC.

30. Looking at the options you should be able to reason out that the issue of 'security in large stadiums' should be left out of the purview of the discussions from the players' perspective as that would be an irrelevant issue in the current discussion. The core discussion is centered around the sharing of the movements of the players during their personal time. If they are in a large stadium playing a match, it would be natural to expect that their whereabouts would be known at that point of time. Hence, raising the point of security at large stadiums is an irrelevant issue to be brought up in this case.

Hence, option (d) is the correct answer.

31. The status of the human beings at the point mentioned in the question is clearly stated in the conversation, is due to their loss of control over the machines they built. These machines had AI which became superior to the human mind and these machines started controlling human

lives. Hence, the development of AI by human beings is the key reason responsible for their status in the latter part of the 22nd century.

Thus option (d) is correct.

32. Option (a) can be inferred from Morpheus's starting statements (where he says—this is the core where we broadcast our pirate signal and hack into the matrix).

Similarly, option (c) can be inferred—as the machines clearly get their power from the human body, while the source of power of the human body is naturally going to be different.

Options (d) and (e) are also inferable.

Only option (b) cannot be inferred as the period of conflict is likely to be a couple of centuries, while option (b) states it to be a few decades, which is not something that one would agree to if one reads and infers the time frame from the passage.

Hence, option (b) is correct.

33. The right mix of theory and practical application is the need of the day and this, needs to be implemented in the curriculum of the Business Schools to reduce the lop-sided teaching and hence improve the overall scenario. Option (d) is the correct answer as other options offer either incorrect or partial answers. For instance, option (a) talks only about the use of illustrations of real life problems in classrooms. It does not clearly show the way about what one needs to do with the theory that is being taught currently in B-Schools. Similarly, option (b) is a shooting in the dark approach, as 'sending students to find business problems' is a very vague step and one does not know what kind of problems the students would be able to find on their own. Giving business education only to those with work experience (option c) or removing theoretical inputs altogether from the classroom (option e) are also impractical steps and hence should be rejected as the solution.

Option (d) is hence the correct answer.

34. The argument here is that it is unnecessary to try and find exotic particles because there is no direct use of these things. To weaken this argument we need to show that all the things that eventually are useful need to be discovered first and consequently they are used to find some practical application. So criticizing something at the stage of discovery is not correct. Thus, if we can show that 'Knowledge has preceded application in all spheres of science' we would be able to best weaken the argument.

Thus option (c) is the best choice to weaken the argument.

35. It is clear from the passage that Silver is a critic of the new theories and that these new researches are very expensive. Option (e) has both these statements included in it.

Thus, option (e) is correct.

36. The passage has specifically informed us that a probability of an event can be attached to a class/category of individuals but we cannot predict the probability of a specific event based on the estimation of probability of that event occurring for a class/category of people.

Thus, we can attach a numerical value to 'the probability of death' for a 40-year old adult with general health condition but we cannot attach a numerical value to the 'probability of death' of a particular individual.

Statement (1) is therefore false, as it says that we can attach a probability to a singular non-

replicable event—which in effect means to say that we can attach a probability to a particular event. On the basis of this judgement, we can remove options (a), (c) and (e) as they include statement 1 as true.

Statement (3) is also clearly false, because it says that the data about a class of events can be used to predict the future of any ‘specific event’. This in effect is saying that we can use the data for the probability of death of 40 year old people to predict the exact probability of death of a particular 40-year old individual. The whole passage is talking against this logic.

Statement (2) is true as probability calculations are indeed based on the data of a class of people/events.

Hence, option (b) is the correct answer.

37. The author is clearly arguing that the probability of an individual specific event cannot be assigned a numerical value based on the numerical value for the probability of the ‘class of events’.

In the case, that we try to assign the probability of an individual boxer winning a specific fight between two boxers, based on the analysis of outcomes of fights between the boxers of two clubs, we are doing exactly what the author says we cannot do. In other words, we are assigning a numerical probability to the outcome of a specific event (in this case the specific event is the outcome of the fight between Joe and Mark), based on the numerical probability of the class of events (the class of events being the fights between boxers of that club).

Hence, the author would disagree if we analyse the outcome of a boxing match based on the analysis of fights between boxers of two clubs.

Option (b) is correct.

38. Current fitness levels and strengths of the individual boxers would be a better way to predict the outcome of a boxing match than by trying to assess it based on a series of previous events.

Hence, the author is most likely to agree to the statement in option (a).

Option (a) is correct.

39. Option 1. [[[please correct the language of the option 1...replace “author’s liberty” by “another’s liberty”]]]

Here the conclusion of the author is that one cannot maintain one’s dignity without encroaching upon the liberty of another. Thus option (a) is correct.

40. Option (b) is correct.

41. The claims made are about a restful sleep, being refreshed and energised.

No claims are made about curing indigestion. Thus option (c) is correct.

42. The paragraph starts with an idea about the importance of visuals in a film, but changes by the example about the films being made on stage plays and being successful. Now to oppose the idea we have to find an idea which focuses on the visual aspect. Thus option (c) is correct.

43. The assumption here must be that the advantage due to saving done by buying in the super market is much more than the inconvenience being caused by not being able to buy single units.

Thus, option (e) is correct.

Directions for Questions 1 and 2: Please go through the following passage.

The Yoga system is divided into two principal parts—Hatha and Raja Yoga. Hatha Yoga deals principally with the physiological part of man with a view to establish his health and train his will. The processes prescribed to arrive at this end are so difficult that only a few resolute souls go through all the stages of its practice. Many have failed and some have died in the attempt. It is therefore strongly denounced by all the philosophers. The most illustrious Shankaracharya has remarked in his treatise called *Aparokshanubhuti* that “the system of Hatha Yoga was intended for those whose worldly desires are not pacified or uprooted.”

1. Which one of the following, if true, most substantially strengthens the idea given in the passage?
 - (a) The number of Yoga schools teaching Raja Yoga is more than the number of Yoga schools teaching Hatha Yoga.
 - (b) The percentage of people in a given ashram practicing Raja Yoga is more than the percentage of people practicing Hatha Yoga.
 - (c) The number of people in a given ashram practicing Raja Yoga is more than the number of people practicing Hatha Yoga.
 - (d) The number of teachers teaching Raja Yoga is more than the number of teachers teaching Hatha Yoga.
 - (e) The percentage of students who have successfully learnt Raja Yoga is more than the percentage of students who have successfully learnt Hatha Yoga.
2. Which of the following option best reflects the Shankaracharya’s comments on Hatha Yoga?
 - (a) Hatha Yoga is for those whose worldly desires are not placated.
 - (b) Hatha Yoga has disastrous consequences for Yoga practitioners.
 - (c) Hatha Yoga is ill-suited for people with strong worldly desires.
 - (d) Practiced under the guidance of experts, Hatha Yoga is better than Raja Yoga for some people.

- (e) Raja Yoga gives better results and in a shorter time period for most people, and therefore it should be encouraged.

Directions for Questions 3–16: Go through the questions below and answer them.

3. As man casts off worn-out garments and puts on others which are new, similarly the embodied soul, casting off worn-out bodies, enters into others which are new. Of the following, which one best typifies the argument?
- (a) Argument from authority
 - (b) Inductive generalisation
 - (c) Predictive argument
 - (d) Causal argument
 - (e) Argument from analogy
4. All the parliamentarians whom the reporter interviewed told that they had voted as per their conscience. Therefore, probably all the parliamentarians voted as per their conscience. This argument is an example of:
- (a) Inductive generalisation
 - (b) Predictive argument
 - (c) Argument from analogy
 - (d) Generalisation based on authority
 - (e) Deduction generalisation
5. Nature lovers are attracted to forests and nature parks. Just look at the number of people visiting the Corbett National Park. Which of the following exhibits a pattern of reasoning least dissimilar to the one exhibited in the argument above?
- (a) Defence personnel who are trained in extremely rigorous procedures often end up as dysfunctional members of the society. Hence if an officer is not trained rigorously, such an officer is more likely to be useful to the society.
 - (b) This machinery has increased the work efficiency of the workers. As a result, some of these workers are surplus to the company.
 - (c) Fleas must thrive in a warm environment. During warm weather my dog suffers from fleas more so than during cooler weather.
 - (d) Cigarette smoking is known to cause lung cancer in some people. However, most victims of lung cancer live in regions where smoking is uncommon.
 - (e) Alcoholics and teetotalers usually appear at the same restaurant at the same time of the day. Therefore, alcoholics and teetotalers must be hungry at the same time.
6. In this era of global capital flows, so much money is now flowing throughout the world that no single country can fight the problem of inflation effectively by tightening its monetary policy. If the above is true, which of the following could be most logically concluded?
- (a) Changes in cash reserve ratio by Reserve Bank of India will control the rate inflation in India.
 - (b) Countries' finance ministers have sufficient control over their respective economies.

- (c) Countries' finance ministers have insufficient control over their respective economies.
 - (d) Citizens should limit their consumption which will reduce the demand of products, thus reducing inflation.
 - (e) Inflation does not matter as long as incomes increase.
7. Many entrepreneurs try to control the composition of their boards of directors, but more experienced entrepreneurs tend to share control, inviting participation from institutional investors and outside directors.

Which option best summarises the idea that might be guiding experienced entrepreneurs behaviour?

- (a) The experienced entrepreneurs expect experienced directors to monitor the performance of the enterprise and be a sounding board.
 - (b) The experienced entrepreneurs expect the institutional investors to support the opinion of entrepreneurs on all major decisions.
 - (c) More the number of influential people on board, the easier it is to raise finances.
 - (d) The experienced entrepreneurs expect the institutional investors and outside directors to agree to higher remuneration for the board members.
 - (e) Experienced entrepreneurs expect the experienced directors to engage in day-to-day management of the company.
8. 'There is nothing so stupid as an educated man, if you can get him off the thing he was educated in.'

Which of the following, if true, most seriously undermines the author's contention?

- (a) True education implies a well-rounded exposure to major subjects.
 - (b) Stupidity, like intelligence, is relative and therefore depends on the intelligence of the persons' peers.
 - (c) The cost of a general education has led to the unfortunate fact that a person's education is confined to one field.
 - (d) An educated man will not discuss things which he does not understand.
 - (e) Education is one of the main causes of people recognising their capabilities and developing them further.
9. Ram, an economist, and Ramesh, an astrologer, had a debate. Ram said 'Astrology does not work. It just cannot predict.' 'It can predict better than your subject' rebutted Ramesh.

The evidence that best resolves the above debate will be:

- (a) Conduct a survey among economists asking their opinion regarding the ability of economic theory to predict economic phenomena.
- (b) Compare past performance of astrologers and economists in terms of number of predictions which have come true.
- (c) Conduct a survey among scientists asking which one of the two should be considered as a science.
- (d) Conduct an experiment where both astrologers and economists would be asked to predict

the future. Compare the number of predictions that come true.

- (e) Conduct an experiment where both astrologers and economists would be asked to predict the future. Compare the percentage of predictions that come true.

10. Which of the following sentences draws a metaphor?

- (a) Karl Marx argued that the interests of two classes—the proletariat and the bourgeois are always in conflict and irreconcilable.
- (b) Karl Marx labelled the capitalist a parasite on the back of labour because the whole value or produce created by the labouring man was expropriated by the capitalist.
- (c) Schumpeter argued that changes in economy are brought about by creative destruction.
- (d) Weber held that the protestant ethic was responsible for the rise of capitalism in medieval Europe.
- (e) Galbraith argued for a better balance between private affluence and public poverty, including measures to protect the environment against the excesses of private companies.

11. Which sentence includes an example of personification?

- (a) Take airline pilots for example; they do not need to be graduates to qualify for this job and most pilots are on a salary of ` 300,000 per month or more.
- (b) *Banjaras* of Rajasthan are the human equivalent of an endangered species and have no defence against the encroachment of farmers onto their ancestral lands.
- (c) Recent research provided stark evidence that in education money still plays an important role; it was found that children from poor households could not perform as well as children from rich households.
- (d) Girls in the family should have a share in the ancestral property as a matter of right whether the will includes it explicitly or not.
- (e) Democracy does not help the common citizen and it ultimately degenerates into an oligarchy.

12. Which sentence suffers most from hyperbole?

- (a) Most collectors of coins would give the Earth to own one of the copper coins issued by Mohammad Bin Tughlaq.
- (b) It is thought that eating raw tomatoes would greatly reduce the risk of cancer, but tomato sauce can have a greater effect since it is made from many raw tomatoes.
- (c) Nuclear fusion has potential to solve the energy crisis of not only our country, but that of the entire world.
- (d) Cricket has a great following in India, but the twenty-twenty format took the game to every nook and corner of the world.
- (e) We face an imminent drinking water crisis in India as the population growth is accompanied by a general decrease in rainfall.

13. Which sentence includes a euphemism?

- (a) Bottled water is reputed to be safe for drinking under all circumstances.
- (b) Cell phone network signals are weak in the hilly regions.

- (c) A cemetery is a place where people are buried when they pass away.
 - (d) It is stupid to cry over split milk.
 - (e) Criminal court arbitrates between the parties to the case.
14. Which of the following contains a non-sequitur?
- (a) If statisticians are made judges, they will accept or reject arguments based on probability analyses.
 - (b) Public trust in politicians is at an all time low and we can't insist that the politicians go back to school.
 - (c) Ordinary citizens do not have sufficient grasp of economic indicators to validate published inflation data.
 - (d) Before preparing the annual budget, the CEO of XYZ Steel Limited takes opinion of all the stakeholders.
 - (e) In cricket, the batting average does not always reflect a batsman's ability because it does not reflect how many wins he was instrumental for.
15. Recommence is to suspend as: nonchalant is to:
- (a) carefree
 - (b) beleaguered
 - (c) disagreement
 - (d) agreement
 - (e) tirade
16. Which sentence includes an oxymoron?
- (a) Media reported the attack on media-persons.
 - (b) On weekend we ate and drank a lot.
 - (c) Meena corrected me by pointing out that she wanted pizza instead of burger.
 - (d) He loved his aunt but found her kindness suffocating.
 - (e) One should not compare apples and oranges.

Directions for Questions 17–28: Each group of questions in this section is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question.

Directions for Questions 17–19: Four married couples competed in a singing competition. Each couple had a unique team name. Points scored by the teams were 2, 4, 6 and 8. The 'Sweet Couple' won 2 points. The 'Bindas Singers' won two more points than Laxman's team. Mukesh's team won four points more than Linas's team, but Lina's team didn't score the least amount of points. 'Just Singing' won 6 points. Waheda wasn't on the team called 'New Singers'. Sanjeev's team won 4 points. Divya wasn't on the 'Bindas Singers' team. Tapas and Sania were on the same team, but it wasn't the 'Sweet Couple'.

17. Laxman's teammate and team's name were:
- (a) Divya and Sweet Couple

- (b) Divya and Just Singing
 - (c) Waheda and Bindas Singers
 - (d) Lina and Just Singing
 - (e) Waheda and Sweet couple
18. The teams arranged in the ascending order of points are:
- (a) Bindas Singers, Just Singing, New Singers, Sweet Couple
 - (b) Sweet Couple, New Singers, Just Singing, Bindas Singers
 - (c) New Singers, Sweet Couple, Bindas Singers, Just Singing
 - (d) Sweet Couple, Bindas Singers, Just Singing, New Singers
 - (e) Just Singing, Bindas Singers, Sweet Couple, New Singers
19. The Combination which has the couples rightly paired is:
- (a) Mukesh, Lina
 - (b) Mukesh, Waheda
 - (c) Sanjeev, Divya
 - (d) Sanjeev, Lina
 - (e) Sanjeev, Waheda

Directions for Questions 20–23: The regular mathematics faculty could not teach because of being sick. As a stop gap arrangement, different visiting faculty taught different topics on 4 different days in a week. The scheduled time for class was 7:00 am with maximum permissible delay of 20 minutes. The monsoon made the city bus schedules erratic and therefore the classes started on different times on different days.

Mr. Singh didn't teach on Thursday. Calculus was taught in the class that started at 7:20 am. Mr. Chatterjee took the class on Wednesday, but he didn't teach Probability. The class on Monday started at 7:00 am, but Mr. Singh didn't teach it. Mr. Dutta didn't teach Ratio and Proportion. Mr. Banerjee who didn't teach set theory, taught a class that started five minutes later than the class featuring the teacher who taught Probability. The teacher in Friday's class taught Set Theory. Wednesday's class didn't start at 7:10 am. No two classes started at the same time.

20. The class on Wednesday started at:
- (a) 7:05 am and the topic was Ratio and Proportion.
 - (b) 7:20 am and the topic was Calculus.
 - (c) 7:20 am and the topic was Ratio and Proportion.
 - (d) 7:05 am and the topic was Probability.
 - (e) 7:00 am and the topic was Calculus.
21. The option which gives the correct teacher-subject combination is:
- (a) Mr. Chatterjee-Set Theory
 - (b) Mr. Chatterjee-Ratio and Proportion
 - (c) Mr. Banerjee-Calculus
 - (d) Mr. Singh-Calculus

- (e) Mr. Singh-Set Theory
22. Probability was taught by:
- (a) Mr. Dutta on Monday
 - (b) Mr. Singh on Monday
 - (c) Mr. Dutta on Thursday
 - (d) Mr. Singh on Wednesday
 - (e) None of the above
23. The option which gives a possible correct class time-week day combination is:
- (a) Wednesday-7:05 am, Thursday-7:20 am, Friday-7:10 am
 - (b) Wednesday-7:10 am, Thursday-7:20 am, Friday-7:05 am
 - (c) Wednesday-7:20 am, Thursday-7:15 am, Friday-7:20 am
 - (d) Wednesday-7:10 am, Thursday-7:15 am, Friday-7:05 am
 - (e) Wednesday-7:20 am, Thursday-7:05 am, Friday-7:10 am

Directions for Questions 24–28: Five people joined different engineering colleges. Their first names were Sarah (Ms.), Swati (Ms.), Jackie, Mohan and Priya (Ms.). The surnames were Reddy Gupta, Sanyal, Kumar and Chatterjee. Except for one college which was rated as 3 star, all other colleges were rated either 4 star or 5 star.

The ‘Techno Institute’ had a higher rating than the college where Priya studied. The three star college was not ‘Deccan College’. Mohan’s last name was Gupta but he didn’t study at ‘Barla College’. Sarah, whose last name wasn’t Sanyal, joined ‘Techno Institute’. Ms. Kumar and Jackie both studied at four-star colleges. Ms. Reddy studied at the ‘Anipal Institute’, which wasn’t a five-star college. The ‘Barla College’ was a five-star college. Swati’s last name wasn’t Chatterjee. The ‘Chemical College’ was rated with one star less than the college where Sanyal studied. Only one college was rated five star.

24. Which is the correct combination of first names and surnames?
- (a) Jackie Sanyal, Swati Reddy, Mohan Gupta
 - (b) Mohan Gupta, Sarah Kumar, Priya Chatterjee
 - (c) Priya Chatterjee, Sarah Sanyal, Jackie Kumar
 - (d) Mohan Gupta, Jackie Sanyal, Sarah Reddy
 - (e) Jackie Chatterjee, Priya Reddy, Swati Sanyal
25. Which option gives a possible student-institute combination?
- (a) Priya-Anipal, Swati-Deccan, Mohan-Chemical
 - (b) Swati-Barla, Priya-Anipal, Jackie-Deccan
 - (c) Swati-Deccan, Priya-Anipal, Sarah-Techno
 - (d) Joydeep-Chemical, Priya-Techno, Mohan-Barla
 - (e) Priya-Anipal, Joydeep-Techno, Sarah-Barla
26. Mohan Gupta may have joined:
- (a) Anipal Institute which had 4 star rating

- (b) Techno Institute which had 5 star rating
 - (c) Deccan College which had 5 star rating
 - (d) Chemical College which had 4 star rating
 - (e) Techno Institute which had 4 star rating
27. In which college did Priya study?
- (a) Anipal Institute
 - (b) Deccan College
 - (c) Chemical Institute
 - (d) Barla College
 - (e) Techno Institute
28. The person with surname Sanyal was:
- (a) Sarah studying in Chemical College
 - (b) Swati studying in Barla College
 - (c) Sarah studying in Techno- Institute
 - (d) Priya studying in Deccan College
 - (e) Jackie studying in Deccan College

Directions for Questions 29–32: Read the following and choose the best alternative.

Decisions are often risky in the sense that their outcomes are not known with certainty. Presented with a choice between a risky prospect that offers a 50 per cent chance to win \$200 (otherwise nothing) and an alternative of receiving \$100 for sure, most people prefer the sure gain over the gamble, although the two prospects have the same expected value. (Expected value is the sum of possible outcomes weighted by their probability of occurrence.) Preference for a sure outcome over risky prospect of equal expected value is called *risk averse*; indeed, people tend to be risk averse when choosing between prospects with positive outcomes.

The tendency towards risk aversion can be explained by the notion of diminishing sensitivity, first formalised by Daniel Bernoulli in 1738. Just as the impact of a candle is greater when it is brought into a dark room than into a room that is well lit so, suggested Bernoulli, the utility resulting from a small increase in wealth will be inversely proportional to the amount of wealth already in one's possession. It has since been assumed that people have a subjective utility function, and that preferences should be described using expected utility instead of expected value. According to expected utility, the worth of a gamble offering a 50 per cent chance to win \$200 (otherwise nothing) is $0.50 * u(\$200)$, where u is the person's concave utility function. (A function is concave or convex if a line joining two points on the curve lies entirely below or above the curves, respectively). It follows from a concave function that the subjective value attached to a gain of \$100 is more than 50 per cent of the value attached to a gain of \$200, which entails preference for the sure \$100 gain and hence, risk aversion.

Consider now a choice between losses. When asked to choose between a prospect that offers a 50 per cent chance to lose \$200 (otherwise nothing) and the alternative of losing \$100 for sure, most people prefer to take an even chance at losing \$200 or nothing over a sure \$100 loss. This is because diminishing sensitivity applies to negative as well as to positive outcomes—the impact of an initial

\$100 loss is greater than that of the next \$100. This results in a convex function for losses and a preference for risky prospects over sure outcomes of equal expected value, called *risk seeking*. With the exception of prospects that involve very small probabilities, risk aversion is generally observed in choices involving gains, whereas risk seeking tends to hold in choices involving losses.

Based on the above logic, analyse the decision situations faced by three persons: Babu, Babitha and Bablu.

29. Suppose instant and further utility of each unit of gain is same for Babu. Babu has decided to play as many times as possible, before he dies. He expected to live for another 50 years. A game does not last more than ten seconds. Babu is confused which theory to trust for making decision and seeks help of a renowned decision making consultant: Roy Associates. What should be Roy Associates' advice to Babu?
- (a) Babu can decide on the basis of Expected Value hypothesis.
 - (b) Babu should decide on the basis of Expected Utility hypothesis.
 - (c) "Mr. Babu, I'm redundant".
 - (d) A and B
 - (e) A, B and C
30. Babitha played a game wherein she had three options with the following probabilities: 0.4, 0.5 and 0.8. The gains from three outcomes are likely to be \$100, \$80 and \$50. An expert has pointed out that Babitha is a risk taking person. According to expected utility hypothesis, which option is Babitha most likely to favour?
- (a) First
 - (b) Second
 - (c) Third
 - (d) Babitha would be indifferent to all three actions.
 - (e) None of the above.
31. Continuing with previous question, suppose Babitha can only play one more game, which theory would help in arriving at a better decision?
- (a) Expected Value.
 - (b) Expected Utility.
 - (c) Both theories will give same results.
 - (d) None of the two.
 - (e) Data is insufficient to answer the question.
32. Bablu had four options with probability of 0.1, 0.25, 0.5 and 1. The gains associated with each options are: \$1000, \$400, \$200 and \$100 respectively. Bablu chose the first option. As per expected value hypothesis:
- (a) Bablu is risk taking.
 - (b) Expected value function is concave.
 - (c) Expected value function is convex.
 - (d) It does not matter which option should Babu choose.

(e) None of above.

Directions for Questions 33–37: This group of questions is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose a response that most accurately and completely answers each question.

A circular field, with inner radius of 10 meters and outer radius of 20 meters, was divided into five successive stages for ploughing. The ploughing of each stage was handed over to a different farmer.

1. Farmers are referred to by following symbols: F1, F2, F3, F4, F5.
2. The points between different stages of the project are referred to by the following symbols: P1, P2, P3, P4, P5, not necessarily in that order.
3. Farmer F5 was given the work of ploughing stage starting at point P4.
4. The stage from point P5 to point P3 was not the first stage.
5. Farmer F4 was given the work of the fourth stage.
6. Stage 3 finished at point P1, and the work of which was not given to farmer F1.
7. Farmer F3 was given work of stage ending at point P5.

33. Which was the finish point for farmer F2?

(a) P1	(b) P2
(c) P3	(d) P4
(e) P5	

34. Which stage was ploughed by farmer F5?

(a) First	(b) Second
(c) Third	(d) Fourth
(e) Fifth	

35. Which were the starting and finishing points for stage 2?

(a) P2 and P5	(b) P5 and P3
(c) P3 and P1	(d) P5 and P4
(e) P3 and P2	

36. For which farmer was P2 a finishing point?

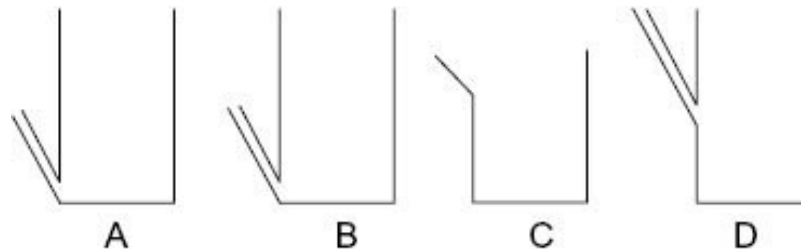
(a) F1	(b) F2
(c) F3	(d) F4
(e) F5	

37. Which was the starting point for farmer F3?

(a) P2	(b) P3
(c) P4	(d) P1
(e) None of the Above	

38. Children are in pursuit of a dog whose leash has broken. Krishnarajan is directly behind the dog. Rangarajan is behind Krishnarajan. Natrajan is behind Rangarajan. Premrajan is ahead of the dog walking down the street in the opposite direction. As the children and dog pass, Premrajan turns around and joins the pursuit. He runs in behind Rangarajan. Krishnarajan runs faster and is alongside the dog on the left. Rangarajan runs faster and is alongside the dog on the right. Which child is directly behind the dog?
- (a) Rangarajan (b) Natrajan
(c) Krishnarajan (d) Premrajan
(e) None of above

39.



The jars A to D are of equal radius. The option which gives the correct relationship among capacity of jars is:

- (a) $A = B < C < D$ (b) $D > B = A = C$
(c) $B = D > A < C$ (d) $B = D > A > C$
(e) $D > A = B > C$

Directions for Questions 40–43: Read the following caselet and choose the best alternative.

Om Chowdhury was one of the supervisors in the Fire and Safety (F&S) department of Maqsood Textile Mills. He was distant cousin to Mr. Bhiwani, General Manager (Personal & Administration). Personal & Administration department was given the responsibility of all personnel related decisions. It was often rumored that Om had obtained the job due to his cousin's influence. However, Om was meticulous in the performance of his duties and didn't give anyone reason for complaint. It was known that Om was not much given to talking and kept to himself and to his duties.

All F&S supervisors reported to Mr. Rabindra, the shop-floor manager. The mill operated on a three-shift basis and Rabindra allocated the supervisors to different shifts. They were required to be present at all times during the shift operation and carry out scheduled checks on all machinery and firefighting equipments. For some reasons, Om was allocated the night shifts more often than other supervisors. Om accepted these allocations without any objection, while it was known that other supervisors would often plead and bargain with Rabindra to be allocated the day shifts. During the night shift, keeping awake and remaining mentally alert were some of the major challenges faced by the supervisors.

Of late, Rabindra observed signs of indifference from Om. On two occasions he found Om absent from his cabin. Rabindra heard from others that Om was often found in different part of the shop-floor talking. Rabindra called him to his office and reminded Om of his responsibilities. Om did not counter Rabindra. He promised that he would not lax in his duties again. Rabindra also broached the

subject with Mr. Bhiwani. Mr. Bhiwani called Om to his office and talked on a very personal basis. He reminded Om that their family relations made it uncomfortable to all concerned. Om nodded and agreed to do better. Soon his performance became that of a model supervisor. It was often found he went beyond his official duties to sort out problems of employees.

About three months later, Rabindra happened to visit the plant during the night. As he looked into the F&S office, he found Om playing Solitaire on the office computer. Mr. Rabindra immediately fired Om.

The next morning Mr. Bhiwani called Mr. Rabindra and asked how he can fire an employee. He suggested that Mr. Rabindra reconsider Om's dismissal. 'This decision has already been made. There will be no turning back' replied Rabindra.

40. The options below give combinations of possible root cause of the problem and the justifications thereof. Given the details in the case, which one can be inferred to be the best option?
- (a) Hiring of Om. **Reason:** That ensured Om was perpetually casual towards his duties.
 - (b) Om favouring to work during night shift. **Reason:** Absence of Rabindra ensured that Om could relax.
 - (c) Rabindra's bias against Om. **Reason:** Rabindra had been assigning too many night shifts to Om while for other supervisors he was lenient.
 - (d) Rabindra jumping to conclusions. **Reason:** He should have investigated whether Om had carried out his duties.
 - (e) Rabindra's firing of Om. **Reason:** It led to clash between Rabindra and Mr. Bhiwani.
41. The details of the entire episode have become common knowledge among all the employees of the company. Out of the following options, which one presents the best way for the top management to resolve the issue so as to benefit the organisation as a whole?
- (a) Revoke Rabindra's order. It can be communicated to others that firing was too severe a punishment for such a small incident of indiscipline.
 - (b) Ask Om for clarification. It can be communicated that since Om had clarified regarding his duties, the order has been taken back.
 - (c) Declare Rabindra's order as void. Reiterate officially the disciplinary processes that need to be followed by managers along with their scope of authority.
 - (d) Ask feedback from other employees on the shop-floor regarding Om's performance. This can be used to revoke Rabindra's order.
 - (e) Take the feedback of other F&S supervisors as to the work involved during night shift. This would better explain Om's behaviour.
42. Out of the options below, which one best summarises the learning from the *solitaire incident*?
- (a) Managers often do not take any responsibility towards training juniors.
 - (b) People tend to become relaxed during the night shift and require surprise checks to keep them on their toes.
 - (c) Certain roles would have different ways of carrying out their duties.
 - (d) Having relatives in the same organisation can be a source of potential problems.

- (e) Managers tend to allocate silent people to different positions.
43. Of the options below, which could have been a better response from Mr. Rabindra when he saw Om playing?
- (a) He should have clarified about his authority to fire employees.
 - (b) He should have informed Mr. Bhiwani about the incident and asked him to take the necessary action.
 - (c) He should have asked the employees of the shift regarding Om's performance of his duties.
 - (d) He should have checked if Om had done his duties or not.
 - (e) He should have checked the production levels in the shift to see if it was as required.

Directions for Questions 44–47: Read the following caselet and choose the best alternative.

Shekhar, an MBA from Singapore returned to his hometown Jamshedpur. Jamshedpur had a population of 10 lacs with one of the highest per capita income among Indian cities. Shekhar loved music. While listening to his favourite song on 'satellite radio', he wondered if he could mix his passion with business. Incidentally, a few weeks later, while browsing the internet, he came across an advertisement from Music world, which called for *expression of interest* from potential franchisees. Jamshedpur did not have a single good music outlet, where its residents could buy quality, variety and the latest from the world of music.

Music world wanted the potential franchisees to own minimum 1200 square feet space and invest ` 30 lacs. Profits were to be shared in the ratio of 3:7 between Music World and the franchisee. While Shekhar was excited about working with a renowned brand, he was worried if ` 30 lacs was too high an amount to shell out. He did not have the entire amount with him and was thinking of borrowing from the bank. He made enquiries with other Music World franchisees located in towns like Patna and Ranchi, as he expected similar footfall in Jamshedpur. A franchisee in Patna had sales revenue varying from 1–2 lacs rupees per month with profit margin in the range of 25–30%. Satisfied, Shekhar decided to proceed.

Soon, he was on a look out for the space. Jamshedpur had three main areas—Bistupur, Sakchi and Sonari. All areas were inter-connected by good roads. Bistupur was a business area where most of the high-end retail formats were located. Most upper middle class and higher class customers shopped there. It was also the education hub of the city. On the other hand, Sakchi was a growing lower middle class business area and Sonari had mostly residential population.

Shekhar was in favour of choosing Bistupur as it was the place where he shopped. However, he soon stumbled across problems. Not only was it difficult to obtain space in Bistupur but property rentals touched 30–40 rupees per square feet per month. Rentals at Sakchi and Sonari were in the Range of 15–20 rupees per square feet per month. Also, Shekhar's friend, who stayed in Sakchi, told him that a few branded outlets were opening in Sakchi and it seemed to be the fastest growing market in Jamshedpur, with highest ratio of teenagers. But, Shekhar was not in favour of Sakchi due to its low image. He expected to target college going crowd in Bistupur.

High real estate prices in Bistupur and his low assessment of Sakchi market created confusion in Shekhar's mind. To give the decision a serious and fresh thought, he decided to hit Jamshedpur-Ranchi highway in his newly acquired car.

44. How best should Shekhar resolve his confusion?
- (a) By investing in the franchise
 - (b) Do not invest in the franchise and look for different brand name.
 - (c) Go back to Singapore and start to find the drivers and potential of the business.
 - (d) Do a further in-depth study to find the drivers and potential of the business.
 - (e) Approach another music company for setting up a franchise.
45. Suppose sales in Patna and Bistupur are likely to be same, how many years would it take for Shekhar to recoup the investment (consider zero inflation)?
- (a) Less than five years
 - (b) Less than seven years
 - (c) Less than eight years
 - (d) Less than nine years
 - (e) May be never
46. What could be the most likely reason for Shekhar's bias in favour of Bistupur?
- (a) Presence of college-going crowd, as he felt they were the customers for the latest music.
 - (b) Crowded (hoi poloi) image of Sakchi.
 - (c) It was difficult for Shekhar to associate non-Bistupur areas with good quality products.
 - (d) Higher rentals in Bistupur.
 - (e) Patronage of Bistupur shops by executive and their families.
47. Which one of the following is the most important decision criterion in such a business situation?
- (a) Financial capability of entrepreneur
 - (b) Changes in music industry
 - (c) Future market growth
 - (d) Profitability of business in first couple of years
 - (e) Real Estate prices

Answer Key

1. (e)	2. (a)	3. (e)	4. (a)
5. (c)	6. (c)	7. (a)	8. (a)
9. (e)	10. (b)	11. (c)	12. (a)
13. (c)	14. (b)	15. (b)	16. (d)
17. (e)	18. (d)	19. (d)	20. (b)
21. (e)	22. (a)	23. (e)	24. (e)
25. (b)	26. (d)	27. (a)	28. (b)

29. (e)	30. (a)	31. (e)	32. (a)
33. (a)	34. (e)	35. (b)	36. (e)
37. (a)	38. (d)	39. (e)	40. (d)
41. (b)	42. (c)	43. (d)	44. (d)
45. (e)	46. (c)	47. (c)	

Solutions:

1. Since Hatha Yoga is more difficult, the number of people having successfully learnt it has to be lesser than the number of people who have learnt Raja Yoga. Thus option (e) which says that the percentage of people who have successfully learnt Hatha Yoga is much lesser than the percentage of people who have successfully Raja Yoga is the correct option.
Option (e) is correct.
2. Shankaracharya said that Hatha Yoga is for people whose worldly desires are not pacified. Thus option (a) is the correct answer as pacified and placated mean the same thing.
Option (a) is correct.
3. Since a comparison is made here between a person casting off his worn out clothes and the soul casting off the body, this is clearly an analogy. Thus option (e) is correct.
4. Since there is a generalisation made and that too from a specific data, it is an inductive generalisation as it is from specific to general. Thus option (a) is correct.
5. Since we have to find the least dissimilar option, means we have to find the most similar option. Here the argument is from a general conclusion supported by a specific example, similarly in option (c) the general conclusion is supported by a specific example. Thus option (c) is correct.
6. As the question mentions that ‘no single country’ has control, we cannot conclude about any specific, or individual country. Hence option (c) which talks about lack of control of any finance minister seems to be the most logical conclusion. Thus option (c) is correct.
7. An experienced board will definitely bring in a positive outlook and monitoring, thus option (a) seems to be the most logical reason.
8. The educated man is being labeled as stupid in the statement—once you take him off the subject in which he is educated. Obviously, the best counter to this criticism would be any logic which would talk about the educated man being able to think about and reason about subjects in which he has not been supposedly educated in.
Option (c) clearly supports the contention of the author and hence can be rejected. Options (b) and (d) is irrelevant in the context of the author’s contention as it is not related to what the author is saying.
Option (a) best fits the required logic that would undermine the given logic since, if true education means a well-rounded exposure to major subjects, we can clearly say that the author’s contention, that the educated man is stupid in anything other than his subject, is undermined

Hence, option (a) is correct.

9. The question is clearly asking as to what evidence best resolves the debate. Options (a) and (c) can be rejected as they are both talking about taking opinions of people. Opinions are always subjective and always have counter opinions. Hence they would never help you create evidence for or against anything.

Option (b) talks about comparing number of predictions that have come true—which is not a valid measure as it depends on how many predictions were made by both; percentage of predictions which have come true might be a much better logic than simply comparing the number of predictions.

Similarly, option (d) can be rejected because it talks about the number of predictions. Option (e) is much better than option (d) because it talks about comparing the percentage of predictions which come true.

Hence, option (e) is the correct answer.

10. A metaphor shows a comparison or a similarity between two things, without using the word...like, similarly, etc. Here the only similarity is shown in option (b), calling the capitalist as a parasite. Thus option (b) is correct.
11. Personification is giving a non-living or inanimate thing a role or action performed by a human/animate being. Here in one of the options money is said to be playing [money plays]. This is a case of personification as money is inanimate and play is definitely an action by a human living being. Thus option (c) is correct.
12. Here the concept of 'hyperbole' means a wild exaggeration of something or a kind of a blabbering or bragging that is completely off the cuff. In one of the options the example of the coin collectors ready to 'give the earth' is a huge exaggeration. The earth does not belong to anybody, so no one can give it. Thus option (a) is correct.
13. An euphemism is a mild way to say something. It generally tends to give a softened tone or manner and uses words which are mild forms of something. Here in option (c) referring to the people who have died as people who have 'passes away' is a clear example of euphemism. Option (c) is correct.
14. A fallacy where the conclusion is unrelated or totally contrary to the main statement is a non-sequitur. In the given options (a), (d) and (e) clearly had logical conclusions and (c) did not have a conclusion, thus all these four options were eliminated. Option (b) talked about lack of trust in politicians, but the conclusion about sending them back to school did not make any sense. Thus option (b) is correct.
15. Suspend means to stop or delay something and recommence means to start something again. Here the relationship in the analogy question is of opposites. The option (b) offers 'beleaguered' which means troubled is exactly opposite to 'nonchalant' which means apathetic. Thus option (b) is correct.
16. Two words which are contradictory or opposite or which have both a positive and a negative element constitute an oxymoron. Here in option (d) it is mentioned in the sentence about 'kindness suffocating'. Kindness is positive, whereas suffocating is negative, hence both together would constitute an oxymoron. Hence option (d) is correct.

Solutions for Questions 17–19:

After the first reading of the information in the question, you should be able to realise that the variables in the question are:

(i) Team name; (ii) Husband’s name; (iii) Wife’s name; (iv) Points scored.

Further, the collated information should be:

Team names are: Sweet Couple; Bindas Singers; Just Singing; New Singers

Husband names are: Laxman, Mukesh, Sanjeev, Tapas

Wife names are: Lina, Waheda, Divya and Sania

Points scored: 2,4,6,8

Based on this initial information and based on using the two direct clues given in the paragraph (saying that the Sweet Couple won 2 points and Just Singing won 6 points), your starting grid should be as follows:

STARTING GRID

Team Name	Husband	Wife	Points
			8
Just Singing			6
			4
Sweet Couple			2

At this point, the next clue that becomes usable is the one about: “Mukesh’s team won 4 more points than Lina’s team, but Lina’s team didn’t score the least amount of points” Æ Lina’s team could only have scored 4 points and Mukesh’s team must have scored 8 points.

We also know that ‘Sanjeev’s team won 4 points.’

Placing all this information into the above grid, the grid would transform into the one below:

GRID 2

Team Name	Husband	Wife	Points
	Mukesh		8
Just Singing	Tapas	Sania	6
	Sanjeev	Lina	4
Sweet Couple			2

The above grid has only one place to be filled for a husband name and hence Laxman would be the Husband in the Sweet Couple team.

We also know that: “Bindas Singers scored 2 points more than Laxman’s team” which in effect now

means that Bindas singers must have scored 4 points Æ New singers scored 8 points.

Also, since Waheda was not on the New Singers team, she must have been on the Sweet Couple team and consequently Divya would be on the New Singers team.

The grid now becomes complete with this analysis placed inside the grid.

FINAL GRID

Team Name	Husband	Wife	Points
New Singers	Mukesh	Divya	8
Just Singing	Tapas	Sania	6
Bindas Singers	Sanjeev	Lina	4
Sweet Couple	Laxman	Waheda	2

- The answers can be read off the above table:
- Waheda and Sweet couple. Option (e) is correct.
 - The ascending order arrangement of the teams’ based on the points they scored was: Sweet Couple – Bindas Singers – Just Singing – New Singers.
Option (d) is correct.
 - Sanjeev-Lina is the only pair which is correctly matched. Hence, option (d) is correct.

Solutions for Questions 20–23:

From an initial reading of the information, you can clearly see that the variables in the problem are: The day of the lecture, the time the lecture started, the person who took the class and the topic of the class. Further we can see that the values for the variables are:

- (i) Days: Monday, Wednesday, Thursday, Friday;
- (ii) Time: 7 AM, 7:10 AM, 7:20 AM, One Unknown time (either 7:05 or 7:15);
- (iii) People: Mr. Singh, Mr. Chatterjee, Mr. Dutta, Mr. Banerjee
- (iv) Topics: Calculus, Probability, Ratio and Proportion & Set Theory

It might be best to anchor the table around the days – Monday to Thursday as there is the natural advantage of these days being in chronological order. The starting solution grid after using the direct clues given in the question (viz: ‘The class on Monday started at 7 AM, Mr. Chatterjee took the class on Wednesday & the teacher in Friday’s class taught Set Theory’) would look like this:

STARTING GRID:

Day	Time	Person	Topic
Monday	7 AM		
Wednesday		Mr. Chatterjee	
Thursday			

Friday			Set Theory

Deductions from this point:

- (i) Using the two clues about when Mr. Singh taught, we can first place Mr. Singh on the appropriate day. The clues are: ‘Mr. Singh did not teach on Thursday’ and ‘The class on Monday started at 7 AM, but Mr. Singh did not teach it’. Together if applied to the above grid, we can see that since Mr. Chatterjee is on Wednesday and Mr. Singh cannot be on Thursday and he cannot be on Monday, he must have taught on Friday.
- (ii) At this point we are left with Mr. Banerjee and Mr. Dutta to be placed between Monday and Thursday. Also, since we have already seen that Monday’s lecture started at 7:00 AM, we can use the information about Mr. Banerjee ‘taught a class that started five minutes later than the class.....’ to understand that Mr. Banerjee’s class could not have started at 7:00 AM. Consequently, Mr. Banerjee must have taught on Thursday and Mr. Dutta must have taught on Monday.

After placing all the people on their respective days, the solution grid at this stage starts looking like this:

Day	Time	Person	Topic
Monday	7 AM	Mr. Dutta	
Wednesday		Mr. Chatterjee	
Thursday		Mr. Banerjee	
Friday		Mr. Singh	Set Theory

The focus now shifts to finding out the exact topics on each day and also correlating the information about the starting time for each class to the appropriate day. The following deductions help you move ahead in your solution.

- (i) It is given that Calculus was taught in the class that started at 7:20 AM. This means that the combination of 7:20 AM-Calculus should come together in the same row; further it can only be fit together on either Wednesday or Thursday. If to this we add the information that Mr. Banerjee’s class (Thursday’s class) started 5 minutes later than some other class, we can eliminate the possibility of Calculus and a 7:20 AM class starting on Thursday.
Hence, Wednesday’s class started at 7:20 AM and was a class on Calculus.
- (ii) Once we fix that, we also know then that the class on Friday must have started at 7:10 AM.
With these deductions, the solution grid becomes:

Day	Time	Person	Topic
Monday	7 AM	Mr. Dutta	
Wednesday	7:20 AM	Mr. Chatterjee	Calculus
Thursday		Mr. Banerjee	
Friday		Mr. Singh	Set Theory

Friday	7:10 AM	Mr. Singh	Set Theory

We then look for the remaining information to fill the table. The following deductions applied at this stage of our solution help us do the same:

- (i) **For the remaining topics:** Mr. Dutta didn’t teach Ratio and Proportion means that he must have taught Probability and consequently Mr. Banerjee must have taught Ratio and Proportion.
- (ii) **For the remaining time:** Mr. Banerjee’s class started five minutes later than the probability class, means that Mr. Banerjee’s class must have started at 7:05 AM.

The final solution grid then becomes:

FINAL SOLUTION GRID:

Day	Time	Person	Topic
Monday	7 AM	Mr. Dutta	Probability
Wednesday	7:20 AM	Mr. Chatterjee	Calculus
Thursday	7:05 AM	Mr. Banerjee	Ratio and Proportion
Friday	7:10 AM	Mr. Singh	Set Theory

The answers to the questions can then be read off the above grid.

- 20. Wednesday’s class started at 7:20 AM and the topic was Calculus. Option (b) is correct.
- 21. The only pair which is correctly matched is Mr. Singh-Set Theory. Option (e) is correct.
- 22. Probability was taught by Mr. Dutta on Monday. Option (a) is correct.
- 23. The combination given in option (e) is correct.

Solutions for Questions 24–28:

From an initial reading of the information in the question, we can see that there are 4 variables in the question, viz: Name of person; Surname of person; College Name and college rating.

The first thing we should do is to list down the values for each of the variables.

Names: Ms. Sarah, Ms. Swati, Jackie, Mohan, Ms. Priya;

Surnames: Reddy, Gupta, Sanyal, Kumar and Chatterjee;

College names: Techno Institute, Deccan College, Barla College, Anipal Institute, Chemical College;

Star Ratings: 5 Star (one college) , 4 star (three colleges), 3 star (one college)

The starting solution grid would look as follows (anchoring it on college name):

Note: This is after placing the three direct clues into the grid – viz: Sarah joined Techno Institute; Barla college was a 5 star college; Ms. Reddy studied at the Anipal Institute.

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah		

Deccan College			
Barla College			5 star
Anipal Institute		Ms. Reddy	
Chemical College			

The following deductions would help us move ahead from this situation in the solution grid:

- (i) ‘The 3 star college was not Deccan College’ means that Deccan College has to be one of the 4 star colleges.
- (ii) Since the Techno Institute had a higher rating than the college where Priya studied, it means that Techno Institute must be a 4 star college.
- (iii) Sarah’s last name wasn’t Sanyal gives us that her last name is either Kumar or Chatterjee as she cannot be Reddy or Gupta.

With these deductions the solution grid changes to:

SOLUTION GRID

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah	Kumar/Chatterjee	4 star
Deccan College			4 star
Barla College			5 star
Anipal Institute		Ms. Reddy	
Chemical College			

At this point if you evaluate each clue given in the question, you would realise that none of the clues help you to place values for the variables directly in the above table. The only clue that helps you think further is: Mohan’s last name was Gupta but he didn’t study at Barla College.

This clue used in the above grid gives you a two-way fork based on the fact that Mohan Gupta can only be placed in Deccan College or in Chemical College. Since, there are no direct deductions possible at this stage we would need to move with both these possibilities:

Possibility 1: Placing Mohan Gupta in Deccan College

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah	Kumar/Chatterjee	4 star
Deccan College	Mohan	Gupta	4 star
Barla College			5 star
Anipal Institute		Ms. Reddy	
Chemical College			

From this situation in the grid, the logic string for the remaining information would go as follows:

- (i) Since Ms. Kumar and Jackie both studied at 4 star collegesÆ Jackie cannot be placed in Barla College and he cannot also be in Anipal Institute (as he is a male). This can only mean that Jackie must be in Chemical college (4 star) and consequently Ms. Kumar must be in Techno Institute and must be Sarah Kumar.
- (ii) Anipal Institute then must be a 3 star college.The grid becomes:

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah	Kumar	4 star
Deccan College	Mohan	Gupta	4 star
Barla College			5 star
Anipal Institute		Ms. Reddy	3 star
Chemical College	Jackie		4 star

- (i) Now, since we know that Priya’s college had a lower rating than Techno Insitute, Priya must be in Anipal Institute;
 - (ii) Also since Chemical college was rated 1 star less than the college where Sanyal studied, we get that Sanyal must have been studying in a 5 star college.
- With this we now have one possible solution to the given situation:

FINAL SOLUTION GRID—POSSIBILITY 1 WITH MOHAN GUPTA IN DECCAN COLLEGE

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah	Kumar	4 star
Deccan College	Mohan	Gupta	4 star
Barla College	Swati	Sanyal	5 star
Anipal Institute	Priya	Ms. Reddy	3 star
Chemical College	Jackie	Chatterjee	4 star

THEORY POINT:

Remember that this is a solution which we got by assuming Mohan Gupta to be in Deccan College which was one of the possibilities. For a complete analysis of the situation, we need to see what the other possibility (viz: Mohan Gupta in Chemical College) leads us to. Remember that in multiple possibility solutions, one of two things might occur with the possibilities:

- (a) All possibilities except one contradict some information contained in the text and hence get rejected, leaving us with one possibility which would give us definite solutions for the entire grid;

(b) All possibilities lead to different outcomes, which do not contradict any basic information – hence, there are multiple solutions possible to the question and you have to answer questions based on a reading of these possibilities. (The question we are solving here belongs to this category as you will see when we check for Possibility 2—Mohan Gupta studies in Chemical College.)

Possibility 2: Placing Mohan Gupta in Chemical College

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah	Kumar/Chatterjee	4 star
Deccan College			4 star
Barla College			5 star
Anipal Institute		Ms. Reddy	
Chemical College	Mohan	Gupta	

From this situation in the grid, the logic string for the remaining information would go as follows:

- (i) Since Ms. Kumar and Jackie both studied at 4 star collegesÆ Jackie cannot be placed in Barla College and he cannot also be in Anipal Institute (as he is a male). This can only mean that Jackie must be in Deccan college (4 star) and consequently Ms. Kumar must be in Techno Institute and must be Sarah Kumar.
- (ii) Since Priya studies in a college whose rating is 1 star less than Techno Institute, she cannot be studying in Barla College (which is 5 star) and she must be studying in Anipal Institute which must be 3 star.
- (iii) Chemical College should then be a 4 star college.
- (iv) With Sarah, Jackie, Mohan and Priya already placed in the grid, Swati can only be studying in Barla College.

The grid becomes:

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah	Kumar	4 star
Deccan College	Jackie		4 star
Barla College	Swati		5 star
Anipal Institute	Priya	Ms. Reddy	3 star
Chemical College	Mohan	Gupta	4 star

Finally, since Chemical College is 1 star less than the college where Sanyal studied, we can say that Sanyal studied in Barla College and the final grid for possibility 2 looks like:

FINAL SOLUTION GRID—POSSIBILITY 2 WITH MOHAN GUPTA IN CHEMICAL COLLEGE:

College Name	Name of student	Surname	College Rating
Techno Institute	Sarah	Kumar	4 star
Deccan College	Jackie	Chatterjee	4 star
Barla College	Swati	Sanyal	5 star
Anipal Institute	Priya	Ms. Reddy	3 star
Chemical College	Mohan	Gupta	4 star

For solving the questions in the set, we would need to consider both the possible solutions. Scenarios may be definitely true if they occur in both the possibilities. Probably true/ Can be true scenarios would mean scenarios occurring in one of the two possibilities (even if they are not true in the second one). Definitely false scenarios would be those which are not possible in either of the two possibilities. With this understanding we can now move to the questions in the set.

24. Since this question asks for a definitive answer, we need to look for the combination, which is true in both the possibility scenarios. It can be seen that the combination Jackie Chatterjee, Priya Reddy and Swati Sanyal given under option (e) is true in both the possibilities and hence is the correct combination of first names and surnames.

Option (e) is correct.

25. This question asks us for a possible student-institute combination. Hence, if we can spot the given combination in an option, even in one of our two possible solution scenarios, we can conclude that the option is correct.

Checking the options in the question we see that the combination given under option (b) (Swati- Barla; Priya-Anipal; Jackie-Deccan) is possible under possibility 2.

Hence, Option (b) is the correct answer.

26. This question asks us for a possible student-institute combination. Hence, if we can spot the given combination in an option, even in one of our two possible solution scenarios, we can conclude that the option is correct.

Under possibility 2, Mohan Gupta is in Chemical College and it is a 4 star college. Option (d) is correct.

27. Under both the possibilities, Priya was in Anipal Institute. Option (a) is correct.

28. Under both possibilities Swati Sanyal was in Barla College. Option (b) is correct.

Solutions for Questions 29–32:

29. Since, it is given that for Babu, instant and further utility of each unit of gain is same, it follows that he has a straight line function of Utility. Hence, Babu's choice can be either based on expected value or on expected utility. Hence, it also follows that Roy associates' final advice would be redundant.

Hence, option (e) is correct.

30. It can be seen that Babitha's expected value in each of the three cases would be the same. Since Babitha is defined as a risk taking person, it follows that Babitha would go for

maximising her return even at the cost of taking a higher risk. This would be achieved if she took the first option.

Hence, option (a) is correct.

31. Babitha would go for expected value with a risk taking approach in case she has lost the previous game. However, if she had won the previous game, expected utility might be a better option to decide her behaviour. Since, we do not know the outcome of the previous game, we do not have sufficient information to answer the question.

Hence, option (e) is correct.

32. Since Bablu is going for maximum return (even at the cost of taking a bigger risk) his decision making is that of a risk taker. Hence, option (a) is correct.

Solutions for Questions 33–37:

The following grid needs to be created in order to encapsulate the information:

Stage	Farmer	Starting Point	End Point
1			
2			
3			
4			
5			

The first objective for us should be to place the direct information into the grid. There are two direct pieces of information we have:

From Clue 6: Stage 3 finished at P1 (and hence we deduce that stage 4 would have begun at P1);

Also from clue 5, we have that F4 was given the work of the fourth stage.

With this information, the grid looks as below:

Stage	Farmer	Starting Point	End Point
1			
2			
3			P1
4	F4	P1	
5			

Now we have clue 4, which tells us that some stage started at P5 and ended at P3. Looking at our solution grid above we see that this stage can either be Stage 5 or Stage 2 (as it is given that it is not stage 1).

If we try to place the P5-P3 stage as stage 5, it would mean that Stage 4 ends at P5. In this case, F4 would be getting a stage ending at P5. This is something that contradicts clue 7. Hence, P5-P3 can

only be placed in stage 2.
Consequently the grid starts looking as below:

Stage	Farmer	Starting Point	End Point
1			P5
2		P5	P3
3		P3	P1
4	F4	P1	
5			

The following deductions help you complete the grid from this point:

- (i) Clue 7 Æ F3 = Stage 1
- (ii) This means that F5 cannot be doing stage 1 or stage 2 and from clue 3 he does the stage starting at P4. Since, Stages 2 and 3 start at P5 and P3 respectively, it means that F5 can only be placed in Stage 5.
- (iii) From the above deduction we know that the starting point P4 should be for Stage 5 and hence Stage 1 should have a starting point of P2.

The grid would change to:

Stage	Farmer	Starting Point	End Point
1	F3	P2	P5
2		P5	P3
3		P3	P1
4	F4	P1	P4
5	F5	P4	P2

From this point we can use clue 6 to deduce that F1 should be doing stage 2 and F2 would be doing Stage 3.

The final solution would look as below:

Stage	Farmer	Starting Point	End Point
1	F3	P2	P5
2	F1	P5	P3
3	F2	P3	P1
4	F4	P1	P4
5	F5	P4	P2

The answers can then be read off this solution grid:

- 33. Farmer F2 finished at P1. Option (a) is correct.
- 34. Farmer F5 ploughed Stage 5. Option (e) is correct.
- 35. P5 and P3 were respectively the starting and ending points for Stage 2. Option (b) is correct.
- 36. P2 was a finishing point for F5. Option (e) is correct.
- 37. P2 was the starting point for farmer F3. Option (a) is correct.
- 38. The initial order of the people can be seen as follows:

Running in the dog’s direction	Running in the opposite direction
Dog	Premrajan
Krishnarajan	
Rangarajan	
Natarajan	

After Premrajan turns around the order would be:

Running in the dog’s direction
Dog
Krishnarajan
Rangarajan
Premrajan
Natarajan

Now, it is given that Krishnarajan and Rangarajan come in direct line with the dog. With this the file would look like:

Running in the dog’s direction
Krishnarajan, Dog, Rangarajan
Premrajan
Natarajan

It can be clearly seen that Premrajan is behind the dog.

Option (d) is correct.

- 39. The jars A and B have the same capacity. Even though jar B has a greater height than jar A, the capacity of jar B would get restricted by the small pipe attached to it’s outside. This is because water finds it’s own level and even if you fill Jar B with more water than the height of the external pipe, the water in jar B would come down to the level of the external pipe.

Thus, $A=B$. Jar C is obviously the lowest capacity because it has the least height, while Jar I has the maximum height and the external pipe attached to Jar D does not reduce the effective height of Jar D as it extends to the same height as the internal height of the jar. Thus we have $D > A = B > C$.

Hence, option (e) is correct.

Solutions for Questions 40–43:

40. The root cause of the problem in the caselet is obviously related to the firing of Om by Rabindra. However, option (e) can be eliminated as the reason given that it led to a clash between Rabindra and Bhiwani is not valid.

It is evident that a mistake in the conclusion Rabindra made that Om was neglecting his duties. It is given clearly in the caselet that once he was talked to, Om's performance was that of a 'model supervisor' and he even went beyond his official duties to sort out problems of employees.

Thus, it is evident that Rabindra's jumping to conclusions is the root cause of the problem & obviously he should have investigated whether Om had carried out his duties before deciding on an action as drastic as firing Om.

Option (c) also seems close, but we do not have enough information to say that Rabindra was biased against Om.

Option (a) is rejected because it is not true that Om was perpetually casual towards his duties.

Option (b) also does not seem to be correct as it is not known that Om was relaxing on his job all the time.

Hence, option (d) is the correct answer.

41. The correct course of action obviously involves hiring Om back (as he was a good employee and his firing was definitely not warranted). However, at the same time the top management should ensure that Rabindra should also have a face saving solution—as undermining his authority openly would make it difficult for Rabindra to perform his duties further.

Options (a) and (c) are rejected because in these options the management would end up directly undermining Rabindra's action.

Options (d) and (e) are incorrect because asking others would unnecessarily open up the issue further, and prolong it. Whereas the management should focus on closing the issue as fast as possible, ensuring least exposure to people who are not directly involved in the incident. Besides, if the opinion of other employees is sought in the issue, and they rule against Om it would end up making matters worse.

Hence, the best course of action is to ask an explanation from Om and take the order back communicating to others that Om had clarified. Given his kind of personality explained in the caselet it is likely that Om would not react too drastically in his explanations.

Hence, option (b) is correct.

42. It is evident that playing Solitaire is not necessarily going to affect the role Om was playing. It is quite likely that over the past three months when he was emerging as an ideal employee, he could have been playing Solitaire regularly while on duty. Hence, the learning is that certain

roles might have different ways of carrying out their duties.

Option (b) is also a learning that can be derived out of the incident but it is not the main learning arising out of the incident.

The other options can be logically eliminated.

Hence, option (c) is the correct answer.

43. The obvious thing for Mr. Rabindra to have done before blowing his fuse and reacting in this incident is that he should have checked whether Om had done his duties or not. An employee relaxing on the job after ensuring that his duties are done is a totally different scenario for a manager to handle than the employee relaxing on the job without having done his duties. Hence, option (d) is correct.

Solutions for Questions 44–47:

44. The situation is clearly one in which Shekhar does not have enough information about the drivers and potential of the business. He is making too many assumptions here—like the footfall he expects is similar to Patna and Ranchi etc. Thus, taking a concrete decision either for or against the franchise would be the wrong thing to do. This rejects options (a) and (b). Option (c) is rejected because the drivers and potential of his business cannot be studied in Singapore and Option (e) is rejected because going to another Music company would just get him an offer on similar lines. Hence, he should go ahead and do a further study of the business potential and the business drivers for his proposed business in Jamshedpur.

Hence, option (d) is the correct answer.

45. Again in this case, we are not sure of what rental values the Patna franchisee is paying. In the scenario that the revenues are likely to be in the range of 1 to 2 lacs with 25–30% profit margin (for the Patna franchisee) it is clear that the Patna franchisee makes somewhere between 25 to 60 thousand profit per month. In the event that Shekhar opens his shop in Bistupur, he would end up paying close to 36000–48000 as rent.

In such a scenario his profit is likely to dip drastically and might not even be able to cover his interest costs.

Hence, he might never recover his investment.

Option (e) is the correct answer.

46. The question is asking us to reason out why Shekhar has a bias for Bistupur. From the first line of the second last paragraph “Shekhar was in favour of choosing Bistupur as it was the place where he shopped”, it seems that the reason for his bias is that it was difficult for Shekhar to associate non-Bistupur areas with good quality products. However, a closer look at the options shows us that it is also said that Shekhar expected to target college going crowd in Bistupur. This clearly shows that he must feel that they are the customers for the latest music and hence an important component for the success of the shop.

Option (a) talks about the same logic and hence is the likely answer at this point. If you were to consider the other options, they get rejected because:

Option (b) cannot be the answer as we cannot infer that he has a crowded image of Sakchi.

Option (d) would tend to take him away from Bistupur rather than creating a bias for Bistupur.

Option (e) is also not an apparent reason because the passage does not talk about executives and their families shopping in Bistupur.

Hence, option (c) is the correct answer.

47. The most important decision criterion in such a scenario depends on the likely long term success for the business. If the business has long term viability short term costs and risks can be justified.

Looking through the options, it is option (c) that mirrors this thought. Future market growth is likely to have maximum impact on the future viability of the business. Although Real estate prices seem to be an important criterion in this case, it cannot be the main criterion as if the business is viable, real estate prices would automatically get accommodated through the profitability of the business.

Hence, option (c) is the correct answer.

Directions for Questions 1–21: Each group of questions in this section is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question and blacken the corresponding space on your answer sheet.

Directions for Questions 1–4: There are exactly ten stores and no other buildings on a straight street in Bistupur Market. On the northern side of the street, from West to East, are stores 1, 3, 5, 7 and 9; on the southern side of the street, also from West to East, are stores 2, 4, 6, 8 and 10. The stores on the northern side are located directly across the street from those on the southern side, facing each other in pairs, as follows: 1 and 2; 3 and 4; 5 and 6; 7 and 8; 9 and 10. Each store is decorated with lights in exactly one of the following colours: green, red, and yellow. The stores have been decorated with lights according to the following conditions:

No store is decorated with lights of the same colour as those of any store adjacent to it.

No store is decorated with lights of the same colour as those of the store directly across the street from it.

Yellow lights decorate exactly one store on each side of the street.

Red lights decorate store 4.

Yellow lights decorate store 5.

1. Which one of the following could be an accurate list of the colours of the lights that decorate stores 2, 4, 6, 8 and 10, respectively?
 - (a) Green, red, green, red, green
 - (b) Green, red, green, yellow, red
 - (c) Green, red, yellow, red, green
 - (d) Yellow, green, red, green, red
 - (e) Yellow, red, green, red, yellow
2. If green lights decorate store 7, then each of the following statements could be false EXCEPT:

- (a) Yellow lights decorate store 2.
 - (b) Green lights decorate store 10.
 - (c) Red lights decorate store 8.
 - (d) Red lights decorate store 9.
 - (e) Green lights decorate store 2.
3. Which one of the following statements **MUST** be true?
- (a) Green lights decorate store 10.
 - (b) Red lights decorate store 1.
 - (c) Yellow lights decorate store 10.
 - (d) Red lights decorate store 8.
 - (e) Yellow lights decorate store 8.
4. Given that yellow lights decorate exactly two stores on the south side of the street and exactly one store on the north side. If all other conditions remain the same, then which one of the following statements **MUST** be true?
- (a) Red lights decorate store 10.
 - (b) Green lights decorate store 1.
 - (c) Red lights decorate store 7.
 - (d) Yellow lights decorate store 8.
 - (e) Yellow lights decorate store 2.

Directions for Questions 5–8: Six square states having equal area in a country are located in North-South direction in two columns next to each other. States are located in the given order: State 1, State 3 and State 5 are on the western side and State 2, State 4 and State 6 are on the eastern side. Within the six states, there are exactly four medical institutes, two management institutes, and two technical institutes. These eight institutions are located as follows:

No institution is in more than one states.

None of the states contain more than one management institute, and none contains more than one technical institute.

None of the states contain both a management institute and a technical institute.

Each management institute is located in a state that contains at least one medical institute.

The technical institutes are located in two states that do not share a common boundary.

State 3 contains a technical institute and State 6 contains a management institute.

5. Which one of the following could be true?
- (a) State 1 contains exactly one technical institute.
 - (b) State 1 contains exactly one medical institute.
 - (c) State 2 contains exactly one management institute.
 - (d) State 5 contains exactly one technical institute.
 - (e) State 6 contains exactly one technical institute.

6. A complete and accurate list of the states, any one of which could contain the management institute that is not in State 6, would be ____.
- (a) 1, 4 (b) 2, 4
(c) 4, 5 (d) 1, 4, 5
(e) 1, 2, 4, 5
7. If each of the six states contains at least one of the eight institutions, then which one of the following must be true?
- (a) There is a management institute in State 1.
(b) There is a medical institute in State 2.
(c) There is a medical institute in State 3.
(d) There is a medical institute in State 4.
(e) There is a management institute in State 4.
8. If one of the states contains exactly two medical institutes and exactly one technical institute, then which combination of three states might contain no medical institute?
- (a) 1, 3, 5 (b) 1, 4, 5
(c) 2, 3, 5 (d) 2, 4, 6
(e) 4, 5, 6

Directions for Questions 9–12: During a four-week period, each one of seven previously unadvertised products, G, H, J, K, L, M and O—will be advertised. A different pair of these products will be advertised each week. Exactly one of the products will be a member of two of these four pairs. None of the other products gets repeated in any pair. Further, the following constraints must be observed:

J is not advertised during a given week unless H is advertised during the week immediately preceding it.

The product that is advertised twice is advertised during week 4 but is not advertised during week 3.

G is not advertised during a given week unless either J or O is also advertised that week.

K is advertised during one of the first two weeks.

O is one of the products advertised during week 3.

9. Which one of the following could be the schedule of the advertisements?
- (a) Week 1: G, J; week 2: K, L; week 3: O, M; week 4: H, L
(b) Week 1: H, K; week 2: J, G; week 3: O, L; week 4: M, K
(c) Week 1: H, K; week 2: J, M; week 3: O, L; week 4: G, M
(d) Week 1: H, L; week 2: J, M; week 3: O, G; week 4: K, L
(e) Week 1: K, M; week 2: H, J; week 3: O, G; week 4: L, M
10. If L is the product that is advertised during two of the weeks, which one of the following is a

product that MUST be advertised during one of the weeks in which L is advertised?

- (a) K (b) H
- (c) J (d) G
- (e) M

11. Which one of the following is a product that could be advertised in any of the four weeks?

- (a) H (b) J
- (c) K (d) L
- (e) O

12. Which one of the following is a pair of products that could be advertised during the same week?

- (a) G and H (b) H and J
- (c) H and O (d) K and O
- (e) M and O

Directions for Questions 13–17: In a game, ‘words’ (meaningful or meaningless) consist of any combination of at least five letters of the English alphabets. A ‘sentence’ consists of exactly six words and satisfies the following conditions:

The six words are written from left to right on a single line in alphabetical order. The sentence can start with any word, and the successive word is formed by applying exactly one of three operations to the preceding word: delete one letter; add a letter; replace one letter with another. At the most three of the six words can begin with the same letter. Except for the first word, each word is formed by a different operation used for the preceding word.

13. Which one of the following could be a sentence in the word game?

- (a) Bzaeak blaeak laeak paeak paea paeen
- (b) Crobek croeek roeek soeek sxoeek xoeek
- (c) Doteam goleam golean olean omean omman
- (d) Feted freted reted seted seteg aseteg
- (e) Forod forol forols forpls orpls morpls

14. The last letter of the English alphabet that the first word of a sentence in the word game can begin with is:

- (a) x (b) t
- (c) w (d) y
- (e) z

15. If the first word in a sentence is “illicit” and the fourth word is “licit”, then the third word can be

- (a) Enlist (b) Implicit

(c) Explicit

(d) Inlist

(e) Elicit

16. If 'clean' is the first word in a sentence and 'learn' is another word in the sentence, then which one of the following is a complete and accurate list of the positions 'learn' could occupy?
- (a) Third, fourth
 - (b) Third
 - (c) Second, third, fourth
 - (d) Third, fourth, fifth
 - (e) Third, fourth, fifth, sixth
17. If the first word in a sentence consists of five letters, then the maximum number of letters that the fifth word in the sentence could contain is:
- (a) Six
 - (b) Four
 - (c) Five
 - (d) Seven
 - (e) Eight

Directions for Questions 18–21: Professor Mukhopadhyay works only on Mondays, Tuesdays, Wednesdays, Fridays and Saturdays. She performs four different activities—Lecturing, conducting quizzes, evaluating quizzes and working on consultancy projects. Each working day she performs exactly one activity in the morning and exactly one activity in the afternoon. During each week her work schedule MUST satisfy the following restrictions:

She conducts quizzes on exactly three mornings.

If she conducts quizzes on Monday, she does not conduct a quiz on Tuesday.

She lectures in the afternoon on exactly two consecutive calendar days.

She evaluates quizzes on exactly one morning and three afternoons.

She works on consultancy project on exactly one morning.

On Saturday, she neither lectures nor conducts quizzes.

18. On Wednesdays, the professor could be scheduled to:
- (a) Work on a consultancy project in the morning and conduct a quiz in the afternoon.
 - (b) Lecture in the morning and evaluate quizzes in the afternoon.
 - (c) Conduct a quiz in the morning and lecture in the afternoon.
 - (d) Conduct a quiz in the morning and work on consultancy project in the afternoon.
 - (e) Evaluate quizzes in the morning and evaluate quizzes in the afternoon.
19. Which of the following statements must be true?
- (a) There is one day on which she evaluates quizzes both in the morning and in the afternoon.
 - (b) She works on the consultancy project on one of the days on which the lectures.

- (c) She works on the consultancy project on one of the days on which she evaluates quizzes.
- (d) She lectures on one of the days on which she evaluates quizzes.
- (e) She lectures on one of the days on which she conducts quizzes.
20. If the Professor conducts a quiz on Tuesday, then her schedule for evaluating quizzes could be?
- (a) Monday morning, Monday afternoon, Friday morning, Friday afternoon
- (b) Monday morning, Friday afternoon, Saturday morning, Saturday afternoon
- (c) Monday afternoon, Wednesday morning, Wednesday afternoon, Saturday afternoon
- (d) Wednesday morning, Wednesday afternoon, Friday afternoon, Saturday afternoon
- (e) Wednesday afternoon, Friday afternoon, Saturday morning, Saturday afternoon
21. Which one of the following must be a day on which the professor lectures?
- (a) Monday (b) Wednesday
- (c) Tuesday (d) Saturday
- (e) Friday

Read the following situation and choose the best possible alternative.

Directions for Question 22: The surnames of four professionals are: Bannerji, Chatterji, Mukherji and Pestonji. Their professions are accountant, lawyer, dentist and doctor (not necessarily in this order). The accountant and lawyer work in their offices, while the dentist and doctor work in their nursing homes. The accountant looks after Mukherji's and Chatterji's account. Chatterji, does not know Bannerji, although his nursing home is in the same street as Bannerji's office. Chatterji is not a doctor.

What are the occupations of the four people?

- (a) Bannerji-Doctor, Chatterji-Accountant, Mukherji-Dentist and Pestonji-Lawyer
- (b) Bannerji-Doctor, Chatterji-Dentist, Mukherji-Accountant and Pestonji-Lawyer
- (c) Bannerji-Lawyer, Chatterji-Dentist, Mukherji-Accountant and Pestonji-Doctor
- (d) Bannerji-Lawyer, Chatterji-Dentist, Mukherji-Doctor and Pestonji-Accountant
- (e) Bannerji-Dentist, Chatterji-Lawyer, Mukherji-Doctor and Pestonji-Accountant

Go through the situation and the accompanying table, and pick up the best alternative to answer Question Nos. 23–24

Directions for Questions 23–24: There are five sets of digits—Set A, Set B, Set C, Set D and Set E as shown in given table. Set A contains one digit, Set B contains two digits, Set C contains three digits, Set D contains two digits and Set E contains one digit. Rearrange the digits, across the sets such that the number formed out of digits of Set C is a multiple of the numbers formed from digits in the sets on either side. For example; in the given diagram, Set C is a multiple of digits in Set A and Set B but not of Set D and Set E.

SET A	SET B	SET C	SET D	SET E

7	28	196	34	5

23. What is the minimum number of rearrangements required to arrive at the solution? A rearrangement is defined as an exchange of positions between digits across two sets. For example: when 1 from set C is exchanged with 5 of set E, it is counted as one rearrangement.
- (a) 8

(b) 5

(c) 2

(d) 3

(e) 7
24. Which of the following pair of digits would occupy set A and E?
- (a) 2 and 4

(b) 2 and 6

(c) 4 and 8

(d) 3 and 6

(e) 3 and 9

Directions for Questions 25–28: Read the following situations and choose the best possible alternative.

25. A database software manufacturing company found out that a product it has launched recently had a few bugs. The product has already been bought by more than a million customers. The company realised that bugs could cost its customers significantly. However if it informs the customers about the bug, it feared losing credibility. What would be the most ethical option for the company?
- (a) Apologize and fix up the bug for all customers even if it has to incur losses.

(b) Keep silent but introduce an improved product that is bug free at the earliest.

(c) Do not tell the customers about bugs and remove only when customers face problems, even if it means losses for the customers.

(d) Keep silent and do nothing.

(e) Take the product off the market and apologize to customers.
26. The city of Nagar has a population of 10 million, 2 million amongst whom were rich, 3 million poor and 5 million belonged to the middle class. Saundarya Cosmetics manufactured and sold beauty products to the rich class at a premium price. Its products were very popular with customers. Many people from the middle and poor segments of population aspired to buy these products but could not afford because of high prices. Of late, sales growth was stagnating in the rich segment. Which of the following is the best option for Saundarya Cosmetics to maximise its long-term profits?
- (a) Sell the same products at lower prices to middle and poor classes.

(b) Sell its products under different brand names to middle and poor classes.

(c) Sell similar products, of different quality standards with different brand names, to middle classes and poor classes.

(d) Continue to target rich only and hope that today’s middle class would be tomorrow’s rich class.

- (e) Target middle class as it is the largest segment and forget about rich class.
27. Seema was a finance manager in an MNC and felt that gender discrimination at work place hampered her career growth. Frustrated, she quit the job and started a company. While starting her company, Seema decided that she would have equal proportion of males and females. Over the last six years, Seema emerged as a very successful entrepreneur and expanded her business to eight locations in the country. However, Seema recently started facing an ethical dilemma because she realised that female employees were not willing to travel across cities and work late hours, as the work required them to do so. Male employees did not hesitate undertaking such work. Seema started to feel the pressure of reducing the proportion of female employees. On the other hand, she is aware that equal representation was one of the strongest reasons for her to have founded the company. What should she do as a conscientious female entrepreneur?
- See if unwilling female employees could be given assignments which do not require travel and involve less overtime.
 - Reduce the number of female employees as it is a business requirement. She should not let anything affect her business.
 - Let the status quo continue.
 - Henceforth hire only male employees.
 - She should close the business.
28. You, a recruitment manager, are interviewing Mayank, a hard-working young man, who had problem in speaking fluent English. He has studied in vernacular medium school and colleges. Amongst the following options, what would you choose to do, if your company has vacancies?
- I would hire him for production or finance job but not for marketing job, which requires good communication skills.
 - I would ask him to improve his communication skills and come back again.
 - I would hire him at all costs.
 - I would not hire him as he might be a burden on the organisation because of his poor communication skills.
 - I would hire him for the job he is good at, and provide training in other areas.

Directions for Questions 29–31: Go through the table that follows and pick up the best alternative to answer the questions that follow.

Teams A, B, C and D are participating in a cricket tournament. Team A has to pick up five batsmen out of ten available. All batsmen have played 100 matches each in the past. Past data indicates that C beats A 8 out of 10 times. B beats A 5 out of 10 times and D beats A 1 out of 10 times. The conditions for the series are likely to be normal and bowling strength of all the teams is same. Manager of Team A, based on his past experience feels that the team should take high risk against stronger opponents and low risk against weaker opponents for maximising chances of winning the game.

The average score of the top 10 batsman of Team A is provided in the table given below.

Name of the	Average of batsman based on past performance	Number of times dismissed below 20	Number of times dismissed around	Number of times scored more than a century

bats man			average	
RD	40	20	70	3
ST	44	20	60	10
SG	41	25	50	10
VS	31	50	20	15
RU	28	55	25	12
YS	35	40	40	10
VV	35	35	50	5
MK	30	30	45	5
MT	36	45	30	10
MD	45	30	50	10

The average score of the top 5 batsmen for each team playing in the tournament are: C(270); B(215); D(180)and A (215).

29. Team A would play the third match with B. Based on the statistics above, whom should the manager choose so that A has maximum chances of winning?

(a) RD, RU, MK, VS, YS
(b) RD, VS, MT, RU, YS
(c) ST, RD, MK, MD, SG
(d) RD, VV, SG, VS, MD
(e) SG, RU, YS, MK, VV
30. Team A is playing its first match with team C. Based on the statistics above, whom should the manager choose so that the team has maximum chances of winning?

(a) RD, ST, SG, VS, MD
(b) VS, YS, RU, MD, MT
(c) RD, ST, SG, MD, YS
(d) YS, RU, VS, MK, MD
(e) ST, VS, RU, MD, SG
31. Team A would play the second match with D. Based on the statistics above, whom should the manager choose so that A has maximum chances of winning?

(a) RD, RU, MK, VS, YS
(b) SG, RU, YS, MK, MD
(c) ST, RD, MK, MD, SG
(d) ST, RD, VV, SG, MD
(e) RD, ST, SG, VS, MD

Read the following caselet and choose the best alternative (Question 32–37):

Mr. Rajiv Singhal, Chairman of the Board of Directors of Loha India Ltd., (a steel manufacturing company) had just been visited by several other directors of the company. The directors were upset with recent actions of the company president, Mr. Ganesh Thakur. They demanded that the board consider firing the president.

Mr. Thakur, recently appointed as president, had undertaken to solve some of the management-employees problems by dealing directly with the individuals, as often as possible. The company did not have a history of strikes or any other form of collective action and was considered to have a good work culture. However, Mr. Thakur felt that by dealing directly with individuals, he could portray the management's concern for the employees. An important initiative of Mr. Thakur was to negotiate wages of the supervisors with each supervisor. In these negotiation meetings he would not involve anyone else, including the Personnel Department which reported to him, so as to take an unbiased decision. After negotiation, a wage contract would be drawn up for each supervisor. This, he felt, would recognise and reward the better performers. Mr. Thakur successfully implemented the process for most of the supervisors, except those working in the night shift. For them he had drawn up the contracts unilaterally benchmarking the wages of supervisors of night shift with that of supervisors of the day shift.

For several days Ram Lal a night shift supervisor, had been trying to seek an appointment with Mr. Thakur about his wages. He was disgruntled, not only over his failure to see the president, but also over the lack of discussions about his wage contract prior to its being effected. As a family man with six dependents, he felt his weekly wage should be higher than that granted to him.

Last Thursday afternoon Ram Lal stopped by the president's office and tried to see him. Mr. Thakur's secretary refused his request on the grounds that Mr. Thakur was busy. Infuriated, Ram Lal stormed into the president's office and confronted the startled Mr. Thakur, with his demands for a better wage. Mr. Thakur stood up and told Ram Lal to get out of his office and express his grievance through official channel. Ram Lal took a swing at the president who in turn punched Ram Lal on the jaw and knocked him unconscious.

32. The most likely premise behind Mr. Thakur's initiative regarding individualised meetings with the supervisors seems to be
- (a) Involvement of company's president in wage problems of employees will lead to a better goodwill towards the management among the workers.
 - (b) Individual agreements with supervisors would allow the management to prevent any possible collective action by the supervisors.
 - (c) Employee related policies should allow scope for bargaining by employees which leads to unsatisfied employees.
 - (d) Management will be able to force supervisors to accept lesser wages individually in this way.
 - (e) He would be able to know who the trouble makers in the plant are by interacting with the supervisors.
33. Out of the following, which one seems to be the most likely cause of Ram Lal's grievance?
- (a) His disappointment with the management's philosophy of having one to one interaction

as the supervisors were in a way being forced to accept the wage contracts.

- (b) His being in the night shift had worked to his disadvantage as he could not interact with the management regarding his problem.
- (c) Employment in the night shift forced him to stay away from his family during the day time and therefore he could not interact with his family members much.
- (d) He was not allowed to meet the chairman of the board of directors of the company.
- (e) All of these.

34. The most important causal factor for this entire episode could be:

- (a) Legalistic approach to employee problems.
- (b) Trying to follow a divide-and-rule policy in his dealings with the supervisors.
- (c) Paternalistic approach towards mature individuals in the organisation.
- (d) Inconsistent dealings of Mr. Thakur with supervisors.
- (e) Inadequate standards for measurement of supervisors' on-the-job performance.

35. The situation with Mr. Lal could have been avoided if Mr. Thakur had

- 1. Delegated the task of negotiation of wage contracts for night shift employees to the Personnel department.
- 2. Created a process for supervisors working in the night shift so that they could have an opportunity to interact with him.
- 3. Created an open door policy that would have allowed employees to see him without any appointment.
- 4. Postponed the decision of wage revision for supervisors in the night shift for two months, since supervisors were rotated on different shifts after every two months.

The option that best arranges the above managerial interventions in decreasing order of organisational impact is:

(a) 4, 3, 1, 2	(b) 4, 2, 3, 1
(c) 4, 3, 2, 1	(d) 4, 1, 2, 3
(e) 2, 3, 1, 4	

36. Apart from the supervisors working the night shift, executives of which department will have the most justified reasons to be disgruntled with Mr. Thakur's initiative?

- 1. Production department—for not being consulted regarding the behaviour of the supervisors on the shop floor.
- 2. Finance department—for not being taken into confidence regarding the financial consequences of the wage contracts.
- 3. Marketing department—for not being consulted on the likely impact of the wage contracts on the image of the company.

4. Quality control—for not being able to give inputs to Mr. Thakur on how to improve quality of steel making process.
5. Personnel department—for it was their work to oversee wage policies for employees and they had been ignored by Mr. Thakur.
- (a) 1 + 3 + 4 (b) 1 + 2 + 3
- (c) 1 + 4 + 5 (d) 1 + 2 + 5
- (e) 3 + 4 + 5

Directions for Questions 38–43: Go through the caselets below and answer the questions that follow.

38. A person seeking to refute the argument might argue that
- (a) CEOs should be paid equally.
 - (b) Managing big organisation is more challenging than small.
 - (c) CEOs, who travel more should be paid more.
 - (d) If CEOs of small companies perform well, the company would become big and so would be CEOs salary.
 - (e) Highly qualified CEOs should be paid more because they have acquired difficult education.
39. Which of the following, if true, would strengthen the speaker's argument?
- (a) CEOs of small organisations come from good educational background.
 - (b) A few big family businesses have CEOs from within the family.
 - (c) CEOs of big organisations are very difficult to hire.
 - (d) Big organisations contribute more towards moral development of society.
 - (e) CEOs in big organisation take much longer to reach the top, as compared to their counterparts in small organisations.

Directions for Questions 40 and 41: Hindi ought to be the official language of India. There is no reason for the government to spend money printing documents in different languages, just to cater to people who cannot read/write Hindi. The government has better ways to spend tax payers' money. People across India should read/write Hindi or learn it at the earliest.

40. Which of the following, if true, would weaken the speaker's argument the most?
- (a) The government currently translates official documents into more than eighteen languages.
 - (b) Hindi is the most difficult language in the world to speak.
 - (c) People who are multilingual usually pay maximum taxes.
 - (d) Most people who travel across India learn Hindi within five years.
 - (e) Making Hindi the official language is a politically unpopular idea.
41. United Nations members contribute funds, proportionate to their population, for facilitating smooth functioning of the UN. By 2010, India being the most populous nation on the planet would contribute the maximum amount to the UN. Therefore, official language of United Nations should be changed to Hindi.

Which of the following is true?

- (a) The point above extends the speaker's argument.
- (b) The point above contradicts the speaker's argument.
- (c) The point above is similar to speaker's argument.
- (d) The point above concludes speaker's argument.
- (e) The point above strengthens the speaker's argument.

Directions for Questions 42 and 43: The Bistupur-Sakchi corner needs a speed-breaker. Loyola school children cross this intersection, on their way to the school, and many a times do not check out for traffic. I get to read regular reports of cars and other vehicles hitting children. I know that speed-breakers are irritating for drivers, and I know that children cannot be protected from every danger, but this is one of the worst intersections in town. There needs to be a speed-breaker so that vehicles have to slow down and the children be made safer.

42. Which of the following arguments is used in the above passage?
- (a) Analogy—comparing the intersection to something dangerous.
 - (b) Emotive—referring to the safety of children to get people interested.
 - (c) Attack—pointing out people who are against speed-breakers as being uncaring about children.
 - (d) Statistical analysis—noting the number of children hit by vehicles.
 - (e) Personalisation—telling the story of one child's near accident at the intersection.
43. According to a recent research conducted by the district road planning department, ten per cent students come with parents in cars, twenty per cent students use auto-rickshaws, twenty per cent students use taxis, forty per cent students use the school buses and ten per cent students live in the hostel inside the school.

Which of the following is true about the above paragraph?

- (a) It is similar to speaker's argument.
- (b) It extends the speaker's argument using statistical data.
- (c) It extends speaker's argument using analogy.
- (d) It concludes speaker's argument by using personalisation.
- (e) It contradicts the speaker's argument using statistical data.

Directions for Questions 44 and 45: History, if viewed as a repository not merely of anecdotes or chronology, could produce a decisive transformation in the image of science by which we are now possessed. That image has previously been drawn, even by scientists themselves, mainly from the study of finished scientific achievements as these are recorded in the classics and, more recently, in the textbooks from which each new scientific generation learns to practice its trade.

44. Which of the following best summarises the above paragraph?
- (a) Scientific achievements are recorded in classics and text books.
 - (b) Text books may be biased.
 - (c) Different ways of looking at history can produce altogether different knowledge.
 - (d) History of science can be inferred from finished scientific achievement
 - (e) All of above
45. Which of the following statements is the author most likely to agree with?
- (a) History of science should purposely present different images of science to people.
 - (b) More number of scientific theories results in more number of publications, which benefits publishers.
 - (c) History of science should contain only the chronology of the scientific achievements.
 - (d) History of science presents a scientific way of looking at scientific developments and thus contributes to progress in science.
 - (e) History of science can present multiple interpretations to people regarding the process of scientific developments.

Directions for Questions 46 and 47: Go through the caselets below and answer the questions that follow.

46. Goodricke Group Ltd is planning to give top priority to core competence of production and marketing of tea in 2007. The company intends to increase the production of orthodox varieties of tea. Goodricke is planning to invest ` 10 crore to modernise the factories. The company has announced a net profit of ` 5.49 crore for 2006 as against ` 3.76 crore in 2005.

Which of the following can be deduced from the caselet?

- (a) Production and marketing is core competence of Goodricke Group.
- (b) Increase in production of existing products enhances core competence.
- (c) Core competence can be used for furthering company's interests.
- (d) Core competence leads to modernization.
- (e) Goodricke has given top priority to production because it has earned net profits of ` 5.49 crore.

47. The author reflects on the concept of *Blue Ocean* Strategy. He explains that this concept delivers an instinctive framework for developing uncontested market space and making the competition irrelevant. The author remarks that *Blue Ocean* Strategy is about having the best mix of attributes that result in creation of uncontested market space and high growth, and not about being the best.

The above paragraph appears to be an attempt at

- (a) developing the framework for *Blue Ocean* strategy.
- (b) defining *Blue Ocean* strategy.
- (c) reviewing an article or a book on *Blue Ocean* strategy.
- (d) highlighting how *Blue Ocean* strategy leads to better returns.
- (e) None of above

Answer Key

1. (b)	2. (d)	3. (b)	4. (e)
5. (b)	6. (d)	7. (d)	8. (a)
9. (b)	10. (e)	11. (d)	12. (e)
13. (b)	14. (e)	15. (e)	16. (e)
17. (d)	18. (c)	19. (e)	20. (e)
21. (b)	22. (d)	23. (d)	24. (a)
25. (a)	26. (b)	27. (b)	28. (e)
29. (c)	30. (e)	31. (d)	32. (a)
33. (b)	34. (d)	35. (e)	36. (d)
37. (e)	38. (b)	39. (a)	40. (b)
41. (c)	42. (b)	43. (b)	44. (c)
45. (e)	46. (c)	47. (c)	

Solutions:

Solutions for Questions 1–4:

The basic grid representing the street with the shop numbers as shown would be as given below: (note: This is after using the last two clues in the problem statement viz: ‘Red lights decorate store 4.’ & ‘Yellow lights decorate store 5.’

1	3	5 Yellow	7	9
2	4 Red	6	8	10

From this point we can move further using the basic condition in the problem that there are three

colours in the street: Red, yellow and green

AND the clues which say:

- (i) No store is decorated with lights of the same colour as those of any store adjacent to it.
- (ii) No store is decorated with lights of the same colour as those of the store directly across the street from it.
- (iii) Yellow lights decorate exactly one store on each side of the street.

The following deductions can be made:

Shop 3 and 6 would have green color.

Since shop 3 has green and the yellow on the north side has been used, shop 1 would have Red.

1 Red	3 Green	5 Yellow	7	9
2	4 Red	6 Green	8	10

These are the only definite conclusions we can make as stores 7 and 9 can have red/green or green/red while stores 8 and 10 can have yellow/red and green/red/yellow lights. Given this kind of situation in our solution, we can expect that the questions in this set would mostly ask for what is possible/what is not possible etc. In order to solve such questions we would need to move into the individual questions and check how the questions pan out and move into checking each option to see what is feasible.

1. Looking at the options, the possibility in options (c) and (d) get rejected because store 6 has to necessarily have a green light as seen from our solution grid above. Only options (a), (b) and (e) give us green in store 6. Out of these three options, option (a) and option (e) are rejected because there needs to be exactly one yellow in one of these five stores and option (a) gives us no yellow and option (e) gives us two yellows.

Thus, option (b) is the only possible solution and would give us the following grid:

1 Red	3 Green	5 Yellow	7 Red	9 Green
2 Green	4 Red	6 Green	8 Yellow	10 Red

Option (b) is the correct answer.

2. To our existing point in the solution when we add the information that green lights decorate store 7 we get the following grid:

1 Red	3 Green	5 Yellow	7 Green	9 Red
2	4 Red	6 Green	8	10

The question asks us: What could be false except, which is the same as asking what would be definitely true in this situation.

Checking each of the options and comparing it to the grid we have above, we see that 'Red lights decorating store 9' is a necessity in this situation.

Hence, option (d) is correct.

3. The question asks us which of the following 'Must be correct'. Also, we need to go back to

only the basic information given in the question set as additional information provided for the previous question cannot be taken to be true for the next one unless specifically stated in the question.

Thus, we need to look into the original solution grid that we had and see which of the solutions match that.

If you check the options, you see that the statement ‘Red lights decorate store 10’ is a must. Hence, option (b) is correct.

4. If we need to place two yellow lighted stores into the southern side of the grid (all conditions remaining constant), we can easily see that we cannot place two consecutive yellows in stores 8 and 10. Thus, one of the two yellows on the southern side must be placed in Store 2. Hence, option (e) is correct.

Solutions for Questions 5–8:

The grid given to us in the problem would look as below:

Western Side	Eastern Side
State 1	State 2
State 3 (Technical Institute)	State 4
State 5	State 6 (Management Institute)

In the above states we have to place 4 medical institutes, 2 management institutes and 2 technical institutes. Since, 1 technical institute and 1 management institute have already been placed, it means that we need to place 1 more of each.

Further information that we have gives us two major clues to place the remaining institutes:

- (i) Each management institute is located in a state that contains at least one medical institute;
- (ii) None of the states contain both a management and a technical institute;
- (iii) The technical institutes are located in two states that do not share a common boundary.
- (iv) None of the states contain more than one management institute and none contains more than one technical institute—which means that there can be a state containing more than one medical institute.

Using (iii) above, we get that the only states which do not share a boundary with State 3 are states 2 and 6. However, since state 6 already contains a management institute it cannot contain a technical institute, thus the other technical institute should be in State 2. Also, from (i) above we know that every management institute is located in a state which has at least 1 medical institute.

With this information, we get the following minimum placements in the above grid.

Western Side	Eastern Side
State 1	State 2 (Technical Institute)
State 3 (Technical Institute)	State 4
State 5	State 6 (Management Institute, at least 1 medical institute)

At this point we know the location of both the technical institutes and we also know the location of exactly one management institute as well as the location of at least one medical institute. What is unknown for us is/are:

Location of 3 more medical institutes;

Location of 1 more management institute

Since we have used all the clues, we can move into the questions expecting could be/must be/cannot be kind of questions.

Western Side	Eastern Side
State 1	State 2 (Technical Institute)
State 3 (Technical Institute)	State 4
State 5	State 6 (Management Institute, at least 1 medical institute)

5. We can easily reject options (a), (c), (d) and (e) respectively as below:
State 1 cannot contain a technical institute as the two technical institutes are already fixed for States 2 and 3;
State 2 cannot contain a management institute as we already know that state 2 has a technical institute.
State 5 cannot contain a technical institute as the two technical institutes are already fixed for States 2 and 3;
State 6 cannot contain a technical institute as the two technical institutes are already fixed for States 2 and 3.
Only option (b) is possible in this situation.
Hence, option (b) is the correct answer.
6. The second management institute could be in any of the states 1, 4 or 5. Hence, option (d) is correct.
7. If each of the 6 states contain at least one institute it means that there are 2 states with exactly 1 technical institute (States 2 and 3—already fixed); There would be two states with exactly 1 management institute and 1 medical institute & there would be 2 states with exactly 1 medical institute each. The grid would look as below with the only variable being where the second management institute would be:

Western Side	Eastern Side
State 1 (Exactly 1 medical institute)	State 2 (Technical Institute)
State 3 (Technical Institute)	State 4 (Exactly 1 medical institute)
State 5 (Exactly 1 medical institute)	State 6 (Management Institute, Exactly 1 medical institute)

The true statement from the given options is option (d) i.e., there is a medical institute in State 3.

Hence, option (d) is correct.

8. If one state contains exactly two medical institutes and 1 technical institute that state would be either state 2 or state 3. Then the fourth medical institute would be with a management college in any of states 1, 3 or 5.

Checking the options, we can reject options (d) and (e) as these contain state 6 in them and we already know that state 6 has 1 medical college- hence state 6 cannot be a part of the list of 3 states where there is no management institute.

Option (c) can be rejected as it takes both states 2 and 3 into the list of 3 possible states, which have no medical institute. This cannot happen because we know that either one of these two states contains exactly 2 medical institutes.

Similarly, option (b) gets rejected as a possible list, because if there is no medical institute in any of the three states 1, 4 and 5, then it is a contradiction of the existing situation because we need to put 1 management institute and 1 medical institute in any of these three states.

Option (a) is the only possible answer as if there is no medical college in states 1, 3 and 5 we can still do the following arrangement to meet all the constraints of the problem:

Western Side	Eastern Side
State 1	State 2 (1 Technical Institute, 2 Medical institutes)
State 3 (Technical Institute)	State 4 (1 management institute and 1 medical institute)
State 5	State 6 (Management Institute, Exactly 1 medical institute)

In the above situation, there is no medical college in states 1, 3 and 5.

Hence, option (a) is the correct answer.

Solutions for Questions 9–12:

The given situation talks about a 4 week period in each of which we need to advertise 2 products from amongst G, H, J, K, L, M and O with the given conditions.

The obvious grid we should make for this situation should have the following structure:

Week	Product 1	Product 2
1		
2		
3	O	
4		

The following clues need to be obeyed while placing the other seven missing values in the above grid:

- (i) J is not advertised during a given week unless H is advertised during the immediately preceding week. Note: This means that there would be two consecutive weeks somewhere during the 4 weeks where the H-J combination would necessarily be used.

- (ii) The product that is advertised twice is advertised during week 4 but is not advertised during week 3.
- (iii) G is not advertised during a given week unless either J or O is also advertised that week.
- (iv) K is advertised during one of the first two weeks.
- (v) O is one of the products advertised during week 3.

From this point we need to move into the questions and solve each question independently.

9. Option (a) would look as below:

Week	Product 1	Product 2
1	G	J
2	K	L
3	O	M
4	H	L

This situation contradicts the condition (i) above and hence is rejected.

Option (b) would look as follows:

Week	Product 1	Product 2
1	H	K
2	J	G
3	O	L
4	M	K

It can be checked that the above placement satisfies each of the conditions mentioned above.

Options (c), (d) and (e) can be seen to be rejected because of the following reasons:

Option (c) contradicts condition (iii), i.e. G is not advertised unless either J or O is advertised in the same week;

Option (d) contradicts condition (iv), i.e. K is advertised in the first two weeks;

Option (e) contradicts condition (i)—J has to have H in the immediately preceding week.

Hence, option (b) is correct.

10. If L is advertised twice, it means that L would be necessarily placed in week 4. The grid would look something like below:

Week	Product 1	Product 2
1		
2		
3	O	

4	L	

Now if we use our interpretation of H-J has to be on consecutive weeks in the above grid, it means that H-J can come on weeks 1 & 2 OR on weeks 2 & 3 OR on weeks 3 & 4. Exploring this thought further we get the following possibilities:

Possibility 1: H-J on week 1 and 2:

Week	Product 1	Product 2
1	K/L	H
2	L/K	J
3	O	G
4	L	M

Possibility 2: H-J on week 2 and 3:

Week	Product 1	Product 2
1		
2		H
3	O	J
4	L	

Not possible since there is no place for G in the above grid (as G has to be with either J or C according to condition (iii)).

Possibility 3: H-J on weeks 3 and 4:

Week	Product 1	Product 2
1	L/K	
2	K/L	
3	O	H
4	L	J

Not possible since there is no place for G in the above grid (as G has to be with either J or C according to condition (iii)).

Thus, we can see that L necessarily has to have M in the same week.

Option (e) is the correct answer.

11. In this case we have to assume that the particular product is advertised only once otherwise the question does not make any sense since if we allow two advertising weeks for most products we would be able to see that they can be advertised in any of the four weeks (except

perhaps product O which cannot be advertised in two weeks since it is advertised in week 3).

Once we make this assumption, we get the following thought:

H cannot be advertised in week 4 (as J has to follow H);

J cannot be advertised in week 1 (as H has to be advertised before J);

K has to be advertised in one of the first two weeks, so we cannot take it to weeks 3 and 4;

O has to be advertised in week 3, hence cannot be feasibly advertised in any of the four weeks.

From amongst the options it only leaves us with L which can be advertised in any of the four weeks.

Hence, Option (d) is correct.

12. Checking the options: Option (a) is rejected as G has to have J or O with it;

Option (b) is also rejected as J follows H;

Option (d) puts K in the third week—which contradicts that K has to be in the first two weeks;

Option (c) is also rejected as if we put H and O together we get the following grid structure.

Week	Product 1	Product 2
1		
2		
3	O	H
4	G	J

This situation means that the product advertised twice must be from G or J. Since, C necessarily needs J or O with it, G cannot be repeated as it entails a repetition of J or O also thus repeating two products.

This means, that J must be repeated; but J can only follow H, which means that if we repeat J we would need to repeat H too—something which goes against the conditions in the problem.

Hence, the only feasible option for repetition of a pair of products that can be advertised in a week is the pair of O and M. In this situation, the complete grid would look as follows:

Week	Product 1	Product 2
1	K	H
2	G	J
3	O	M
4	L	H

Hence, option (e) is correct.

Solutions for Questions 13–17:

In order to solve this question set, you need to look at making a consolidated decision making

framework for the application of the rules.

The following framework would help you evaluate the options in various questions:

Rules for changing words		Rule Name (for self reference)
Rule 1	Delete a letter	Rule of Deletion
Rule 2	Add a letter	Rule of addition
Rule 3	Replace a letter	Rule of replacement
RULES FOR SENTENCE FORMATION:		
1. Sentence to consist of 6 words		
2. Each word is formed by a different operation from the previous word which means that we cannot repeat the same rule used to form a particular word in order to form the next word.		Rule of different operations
3. Same starting letters can be used for a maximum of 3 words in the sentence		Rule of maximum cap = 3 for same starting letters in a sentence

Based on this understanding of the rules we can move into the questions:

13. Checking each of the options the correct answer can be arrived at as follows:

Option (a):

Bzaeak	blaeak	laeak	paeak	Paea	paeak
	Rule 3	Rule 1	Rule 3	Rule 1	Rule 2

We can see that this sentence is invalid because the fifth word in the sentence has 4 letters—according to the question we know that every word in the sentence should have at least 5 letters.

Option (b)

Crobek	croek	roek	soek	sxoek	xoek
	Rule 3	Rule 1	Rule 3	Rule 2	Rule 1

Option (c) can be directly rejected because from the first word to the second the sentence starts with:

Doteam-goleam which shows a replacement of 2 letters which is against the rules.

Similarly option (d) is also ruled out as a valid statement, as in the string of words given by reted-seted-seteg the same rule is used twice consecutively (i.e. the rule of replacement).

Option (e) does not give us a valid statement too because the sentence contained in option (e) has four words starting with F.

Hence, option (b) is correct.

14. There is no constraint that restricts the starting letter of the sentence’s first word. Hence, the last possible letter for the first word’s beginning letter is ‘z’. Option (e) is correct.

15. We need to see which word can get changed to ‘licit’ in one operation.

From the options, we can see that if 'Elicit' is the third word, we can get 'licit' as the fourth word by using the rule of deletion.

Option (e) is correct.

16. What can be noticed in moving from 'clean' to 'learn' is that the number of letters is same. Also, there is a deletion of 1 letter and addition of 1 letter between clean and learn.

The following movements are possible from clean to learn:

clean Æ lean Æ learn (so learn can be the third word);

clean Æ tlean Æ lean Æ learn (so learn can be the fourth word)

clean Æ tlean Æ tlearn Æ mlearn Æ learn (so learn can be the fifth word);

In the above moves, we have used: 1 addition and 1 deletion in the first case;

1 replacement, 1 addition and 1 deletion in the second case;

2 replacements, 1 addition and 1 deletion in the third case;

If we want to make learn as the 6th word that means we need 5 operations from clean to learn.

In order to do this we need to try to think of one of two ways:

- (i) 3 replacements and 1 deletion and 1 addition
- (ii) 2 deletions, 2 additions and 1 replacement (note since the number of letters in clean is equal to the number of letters in learn, the number of deletions we use should be equal to the number of additions)

The first of the above ways means we have to use a sequence of either:

Replacement – addition – replacement – deletion- replacement OR

Replacement – deletion – replacement – addition – replacement

The required result can be achieved through the following string:

Clean Æ tlean Æ tleahn Æ cleahn Æ leahn Æ learn

And we can see clearly that we have used the sequence of operations:

Replacement – addition – replacement – deletion - replacement to get learn as the sixth word in the sentence.

The following alternative also exists in this case:

Clean Æ lean Æ tlean Æ mlean Æ mlearn Æ earn

Here we have used: Deletion – addition – replacement – addition – deletion. Thus, we see that learn can be the sixth word too.

Hence, option (e) is the correct answer.

17. We can follow the following sequence to get the maximum number of letters in the fifth word:
1st word = 5 letters; followed by addition Æ 2nd word = 6 letters; followed by replacement Æ 3rd word = 6 letters; followed by addition Æ 4th word = 7 letters; followed by replacement Æ 5th word = 7 letters.

We can also see that there is no way to exceed 7 letters in this case, as we cannot fit in an additional addition operation till the 5th word.

Hence, option (d) is the correct answer.

Solutions for Questions 18–21:

She performs four different activities – Lecturing, conducting quizzes, evaluating quizzes and working on consultancy projects. Each working day she performs exactly one activity in the morning and exactly one activity in the afternoon. During each week her work schedule **MUST** satisfy the following restrictions:

- She conducts quizzes on exactly three mornings.
- She lectures in the afternoon on exactly two consecutive calendar days.
- She evaluates quizzes on exactly one morning and three afternoons.
- She works on consultancy project on exactly one morning.
- On Saturday, she neither lectures nor conducts quizzes.

The following grid structure would be ideal to encapsulate all the information in the question. In the grid below there are a total of 10 slots (5 morning and 5 afternoon).

Day	Morning	Afternoon
Monday		
Tuesday		
Wednesday		
Friday		
Saturday	Consultancy	Evaluates quizzes

After reading the information in the clues provided in the question we realize that **for the five mornings we have the following clues:**

- She conducts quizzes on 3 mornings (leaving 2 more mornings) ;
- She evaluates quizzes on one morning (leaving 1 more morning) ;
- She works on consultancy on exactly one morning—thus all our 5 mornings are accounted for.

Similarly for the five afternoons we have:

- Lectures on two consecutive afternoons (leaving 3 more afternoons free);
- Evaluates quizzes on three afternoons – thus all the 5 afternoons are accounted for.

Also since she neither lectures not conducts quizzes on Saturday we can make the following conclusions about Saturday:

Afternoon has to be spent Evaluating quizzes; Morning can be spent either Consulting or in Evaluating quizzes.

Also, in the grid below we have indicated that there are three C’s (Conducting quizzes in the mornings); One E (Evaluating quizzes in mornings) and One Con (Consultancy assignment in the morning).

Also, for the afternoons we have two L’s (Lectures) and three E’s (Evaluating quizzes)

Day	Morning (C, C, C, E, Con)	Afternoon (L, L, E, E, E)

Monday		
Tuesday		
Wednesday		
Friday		
Saturday	Consultancy/ Evaluates quizzes	Evaluates quizzes

From the clue that says: ‘If she conducts quizzes on Monday, she does not conduct a quiz on Tuesday.’ and applying the same to the above situation we get that she could be conducting quizzes on either Monday, Wednesday and Fridays or on Tuesday, Wednesday and Fridays. This gives us the following possibilities:

Possibility 1:

Day	Morning (C, C, C, E, Con)	Afternoon (L, L, E, E, E)
Monday	Conducts quizzes	
Tuesday	Evaluates quizzes/Consultancy	
Wednesday	Conducts quizzes	
Friday	Conducts quizzes	
Saturday	Consultancy/ Evaluates quizzes	Evaluates quizzes

Possibility 2:

Day	Morning (C, C, C, E, Con)	Afternoon (L, L, E, E, E)
Monday	Evaluates quizzes/Consultancy	
Tuesday	Conducts Quizzes	
Wednesday	Conducts Quizzes	
Friday	Conducts Quizzes	
Saturday	Consultancy/ Evaluates quizzes	Evaluates quizzes

For each of the above possibilities there would be further two possibilities depending on where we place the Lectures and the Evaluating Quizzes from Monday to Friday afternoons.Since the two lectures have to be on consecutive calendar days, the lectures can happen on any of: Monday-Tuesday OR Tuesday-Wednesday.

Based on this understanding we can move into the questions of the set:

18. The question is asking about what can be true about Wednesday. Looking at both the possibilities we have created we can clearly see that on Wednesday morning she is

necessarily conducting quizzes, while on Wednesday afternoons she could be either lecturing or evaluating quizzes.

Option (c) is the correct answer.

19. The question is asking us about which of the options must be true; thus we are looking for a situation which we cannot avoid in any possibility.

Checking each of the options we see that:

Option (a): There is one day on which she evaluates quizzes both in the morning and in the afternoon—is not necessarily true as this is a possibility but not necessarily true.

Option (b): She works on the consultancy project on one of the days on which lectures. Again this can happen but is not necessary if we place Consultancy on Saturday along with evaluating quizzes.

Option (c): She works on consultancy project on one of the days on which she evaluates quizzes—is also not necessary because we can place Consultancy on Monday morning and match it with Lecturing on Monday afternoon.

Option (d): She lectures on one of the days on which evaluates quizzes. Again this can happen but is not necessary.

Option (e): She lectures on one of the days on which she conducts quizzes. This is something that must be true since we have to place two consecutive lectures in the afternoons between the first four days and we cannot avoid having at least one of the lectures on a day on which she is conducting quizzes in the morning.

Hence, option (e) is the correct answer.

20. This question is again asking about what ‘could be’ the schedule for evaluating quizzes. We know that she evaluates quizzes on one morning and three afternoons.

If she is conducting quizzes on Tuesdays it means that the possibility grid would look as follows:

Day	Morning (C, C, C, E, Con)	Afternoon (L, L, E, E, E)
Monday	Evaluates quizzes/Consultancy	
Tuesday	Conducts quizzes	
Wednesday	Conducts quizzes	
Friday	Conducts quizzes	
Saturday	Consultancy/ Evaluates quizzes	Evaluates quizzes

From the above it is definite that she definitely evaluates quizzes on Saturday afternoons.

Her possible schedule about Evaluating quizzes would depend on the following variables:

- (i) Whether she evaluates quizzes on Monday or Saturday morning.
- (ii) On the two consecutive days we choose for the afternoon lectures, and for instance if we choose Monday and Tuesday for lectures, evaluating quizzes would happen in the afternoons

on Wednesday and Friday;

If we choose Tuesday and Wednesday for lectures, evaluating quizzes would happen in the afternoons on Monday and Friday;

Matching the options with these possibilities we see that evaluating quizzes cannot happen on the schedules mentioned in options (a) [because it does not have Saturday afternoon]; option (b) [because it gives us evaluating quizzes on two mornings which contradicts the given conditions]; option (c) [because it shows that she is evaluating quizzes on Monday afternoon, Wednesday afternoon and Saturday afternoon, and that leaves on Tuesday and Friday afternoon for the two lectures. We cannot place the lectures on these two afternoons as it contradicts the condition that lectures occur on two consecutive afternoons.];

Option (d) [because Wednesday morning is fixed for conducting quizzes];

Option (e) is a possibility because in that case we get the following grid which is a distinct possibility as it does not contradict any of the clues.

Day	Morning (C, C, C, E, Con)	Afternoon (L, L, E, E, E)
Monday	Consultancy	Lecture
Tuesday	Conducts quizzes	Lecture
Wednesday	Conducts quizzes	Evaluating quizzes
Friday	Conducts quizzes	Evaluating quizzes
Saturday	Evaluates quizzes	Evaluates quizzes

Hence, option (e) is the correct answer

21. Since she lectures on two consecutive calendar days, she can do so either on Monday and Tuesday afternoons OR on Tuesday and Wednesday afternoons. In either case, Tuesday afternoon is fixed for a lecture. Hence, option (b) is the correct answer.

22. The grid in this question would look as follows:

Surnames	Profession	Work Place	
Bannerji		Office	
Chatterji	Dentist	Nursing home	From the last statement
Mukherji			Not the accountant
Pestonji			

From the above situation, since we know that Bannerji works in an office, hence he is either the accountant or lawyer. Also, since Chatterji does not know Bannerji and the accountant takes care of Chatterji's account, it follows that Bannerji cannot be the accountant and he must be the lawyer. Thus, Pestonji is the accountant and Mukherji the doctor. The final grid would look as follows:

Surnames	Profession
Bannerji	Lawyer
Chatterji	Dentist
Mukherji	Doctor
Pestonji	Accountant

Option (d) is correct.

Solutions for Questions 23 and 24:

The only solution, which satisfies the given conditions is:

2	78	156	39	4

From the original situation:

7	28	196	34	5

- 23. We require 3 interchanges in order to get to the final situation with 156 in the middle cell.
Option (d) is correct.
- 24. The digits in set A and E would be 2 and 4 respectively. Option (a) is correct.

Solutions for Questions 25–28:

- 25. The question asks for the most ethical option for the company. The obvious answer for the same is option (a) as apologizing and fixing the bug even if it has to incur losses would ensure that the losses of the customers are minimised. Options (b), (c) and (d) are not ethical, while option (e) is not as good as option (a) since apologizing to customers would not take care of their inconveniences.
Hence, option (a) is the correct answer.
- 26. It is evident that the company is missing out on 80% of the market size and hence, there is a potential of making the sales go up to 5 times the current sales value. This can be done in two ways suggested under options (a) and (b)—if it sells the same products at lower prices to middle and poor classes OR if it Sells its products under different brand names to the middle and poor classes. The second strategy is better since it safeguards the current business interests of the company and at the same time gives them a strong business growth possibility. This strategy is likely to work and is warranted since the sales growth is stagnating in the rich classes.
Hence, option (b) is correct.
- 27. As a conscientious female entrepreneur, her first objective is to ensure the well being of her business. If there are certain jobs that are not suited to women employees, and due to that she is forced to reduce the number of her female staff, then she is not showing a lack of conscience in doing so. Especially since the circumstances defined in the question talk about her having expanded to 8 cities it is likely that her business would involve the employees

need to travel more and more.

Hence, option (b) is the strongest answer.

Option (c) is not warranted as she has to do something to tackle the business situation and maintaining the status quo would definitely not be good for her business.

Similarly, options (d) and (e) are too drastic and hence are totally uncalled for.

Option (a) is something she must have already explored and found infeasible, otherwise she would not have been facing the pressure if something like that were implementable in her business situation.

Option (b) is the correct answer.

28. Option (e) is the best course of action in the given situation as hiring him for what he is good at makes sense along with providing training in other areas in which he is not good at, so that it gives him a chance to improve his basic skills.

Solutions for Questions 29–31:

The situation defined in the problem clearly states that for playing against weaker opposition, the strategy has to be risk averse—where you depend on players who you know would deliver close to their average, while for playing against stronger opposition you need to be risk taking in your decision making—by opting for players who would represent a higher risk but win you matches by their performance on the day.

A quick scan through the players and their profiles shows for instance that someone like RD is a safe performer as he delivers close to his average 70% of the time, and though he does not do anything spectacular (as borne out by 3 centuries in 100 matches), he is what can be called a dependable player.

Someone like RU or VS on the other hand, represent high risk players with their century rate being high, but at the same time their rate of failure is also very high. VS, for instance, fails 50% of the time. RU fails 55% of the time. However, this is offset by their returns when they succeed as shown by 15% and 12% rate of scoring a century for them.

Based on this understanding we can move to the questions in the set.

29. Team B is a team which is more or less of the same strength as Team A. Hence, the team A should choose dependable players as the risk required to maximize the winning chances is low.

If we look at the options in the question what can be definitely rejected is any selection involving RU, since RU would not be a wise choice in this match against B. Hence, option (a), (b) and (e) are rejected. Similarly, in option (d) the player VS is getting selected and he is also a high risk player. Thus, this is also not the appropriate selection.

Option (c): Selection of RD, ST, SG, MD and MK represent the best set of players who are likely to perform close to their average with the least chance of failure. Hence, option (c) is the correct answer.

30. In a match against the strongest team C, we need to take risks with our selection. RD should definitely not be there in the team as he is a low risk choice. Options (a) and (c) get rejected as they include RD in the choice.

Also, both VS and RU should be part of the team as they represent the highest risk and high returns, if the risk pays off (as they have the highest rates of hitting centuries amongst the players). All the remaining options include both VS and RU in the team. If we compare options (d) and (e) we see that in option (e), ST and SG replace YS and MK from option (d). If we look at the statistics of ST and SG in comparison with YS and MK, it is obvious that even in a high risk situation ST and SG are a better choice (as their century conversion rates are equal, but at the same time their reliability is also higher). So the extra risk in YS and MK is not justified as it does not yield any better returns than ST and SG.

Hence, option (e) is the correct answer.

31. In a match against a weak opposition, we need to be risk averse and choose reliable players. ST, SG, RD, MD and VV is the most risk averse choice as they perform close to their average the maximum number of times (per 100 matches).

Hence, option (d) is the correct answer.

Solutions for Questions 32–37:

32. From what is given in the caselet, it is evident that option (a) can be inferred. The premise that the involvement of the company's president in wage problems of employees would lead to a better goodwill towards the management among the workers. This is clearly inferable from the third sentence in the second paragraph of the passage which states: "However, Mr. Thakur felt that by dealing directly with individuals, he could portray the management's concern for the employees."

Each of the other options can be easily rejected based on an understanding of the central theme of the situation.

Hence, option (a) is correct.

33. Ram Lal's grievance is brought about in the last two paragraphs of the passage. A close reading of this should make you realise that Ram Lal's principal grievance was due to the fact that since he was in the night shift, he did not get a chance to interact with the management regarding his wage fixation and his problems.

Option (b) is the correct answer.

34. The causal factor is clearly the inconsistent approach of Mr. Thakur where he is not consistent towards giving time to each of the supervisors in the company. It is this inconsistent approach of Mr. Thakur that has led to Ram Lal's grievance and the subsequent escalation of the episode to an ugly one.

Option (d) is the correct answer.

35. The best option is in the second intervention, i.e. creating a process for supervisors working in the night shift so that they could have an opportunity to interact with him. This would have solved the issue from the root and would in fact not allowed the issue to have cropped up at all.

The intervention in 3, is the next best one as it would have given Ram Lal an opportunity to meet Mr. Thakur without facing the red tapism of his secretary. Consequently, Ram Lal's grievances would have been heard and it would not have allowed the situation to escalate.

The only option which starts with interventions 2 and 3, is option (e).

Hence, option (e) is the correct answer.

36. From the given options, it is clear that there is a valid reason for the production department to feel aggrieved as Mr. Thakur has not consulted them regarding the behavior of the supervisors on the shop floor. Similarly, the Finance department is also affected as suggested in point number 2, while the Personnel department would definitely feel aggrieved and hence disgruntled as Mr. Thakur has ignored and even bypassed them in fixing wages of supervisors directly.

Hence, 1+2+5 represents the correct set of departments which have the most justified reasons for feeling disgruntled.

Hence, option (d) is the correct answer.

37. Mr. Thakur, clearly lacks emotional stability under pressure, as is borne out from his reaction to Ram Lal's action. As a president of the company he is supposed to behave in a more refined and stable manner and not be hitting employees' no matter what the provocation is.

Hence, option (e) is the correct answer.

38. The argument argues for paying equally to all CEOs and link pay to performance rather than whether the organization they lead is big or small. In order to refute the argument we need to argue that CEOs of big companies are justified in getting paid more.

The best argument from amongst the options is from option (b) which states that 'managing a big organisation is more challenging than managing small organization.' If this argument were to be true, it would oppose the argument of the author effectively.

The other options given can be rejected based on the following thinking:

Option (a) is actually supporting the argument of the author and not refuting it.

Option (c) does not refute the argument because it might be that the CEO who is traveling more might be the CEO of a small organisation.

Option (d) is too vague as an argument, because small companies to become big, typically take years and decades; and even if the CEO of a small company performs well his company might not become big during his reign as the CEO. Hence, this argument is not very effective.

Option (e) also does refute the author's argument as linking pay to qualification does not necessarily guarantee that the CEO of large companies would be paid more.

Hence, option (b) is the correct answer.

39. In order to strengthen the argument of the speaker we need to show that his argument of paying CEOs of all organisations equally is a valid and strong argument. Option (c) is rejected since if CEOs of big organisations were difficult to hire, it directly means that they should in fact be paid more than CEOs of small organisations. This ends up weakening the author's argument. Option (b) is irrelevant to the validity or strength of the argument and hence can be rejected as something that would strengthen the author's argument. Option (d) is again mostly irrelevant to the argument's strength since if big organisations did indeed contribute more towards moral development of society—it is a non-economic logic and should not have any bearing on their pay. Option (e) if true weakens the argument, since it can be reasoned that if it were true that CEOs of big organisations took much longer to reach the top, as compared to their

counterparts in small organisations, it means that they should be paid more. Hence it can be seen to weaken the argument.

Only option (a) in some ways helps the argument that all CEOs should be paid equally, since if it were true that CEOs of small organisations came from good educational background, there is a logic for paying them more and this extra payment should balance out the higher payment that CEOs of big organisations get due to the expected complexity of handling big organisations. The result would be to equate payments of CEOs of big organisations and small organisations.

Hence, option (a) is the correct answer.

Note: Although the answer is not a very good answer to the question, it is the best option from amongst the given options if we are looking at what information if true would strengthen the author's argument.

40. In order to weaken the speakers' argument we can either show that the cost the speaker is talking about is insignificant in the context of the benefits of making Hindi the official language of India OR if we can show that his argument and his subsequent suggestion is impractical to implement.

Looking through the options, you should be able to see that the logic in option (b), if true [i.e. Hindi is the most difficult language in the world to speak], would make the speakers' suggestion highly impractical. None of the other options come close to this option in terms of their weakening effect on the speaker's argument.

Hence, option (b) is the correct answer.

41. The speaker's argument in the previous question was to make Hindi the official language of India, using the lack of justification for spending tax payers money on printing documents in multiple languages—something which at best was a frivolous logic to base the argument on. The point given in this question, talks about making Hindi the official language of the United Nations, based on the logic that India being the most populous nation on the planet would contribute the maximum amount to the UN, something which at best is a frivolous logic to argue that Hindi should be made the official language of the UN.

Hence, we can see that both the arguments are similar in nature. Note that we cannot say that the argument is an extension of the speaker's because the two arguments are unrelated to each other, even though they both talk about making Hindi compulsory in different domains.

Hence, option (c) is the correct answer.

42. The argument creates a visual image for the reader/listener to imagine school children crossing the road in front of speeding vehicles in the absence of speed breakers near their school. This is clearly an emotive appeal to get the reader/listener interested.

The answer gets confirmed as you can clearly see that there is no analogy used in the argument, no statistical analysis used, no personalisation used and no attack on people who are against speed breakers used in the argument.

Hence, option (b) is the correct answer.

43. The paragraph given in this question is clearly using statistical data. This then leads us to consider options (b) and (e). Between these, option (e) can be rejected because it is not

contradicting the speaker's argument for constructing a speed breaker at the Bistupur-Sakchi corner. Similarly, the other options can also get rejected on the basis of:

Option (a) is rejected since the paragraph is in no way similar to the speaker's argument (of the previous question);

Option (c) is rejected since there is clearly no use of an analogy in the paragraph;

Option (d) is also rejected because neither is this a conclusion of the speaker's argument nor is there a use of personalisation.

Hence, option (b) is the correct answer.

44. A summary is the best encapsulation of the idea contained in the original paragraph. Since the question asks us to summarise the paragraph we are looking for the option that conveys to the user the same idea as the original paragraph. The principal argument in the paragraph is that if we look at history in a way different than what we have been doing till date, can produce a transformed knowledge base about science. From amongst the options, option (c) is the summary which is closest to this logic. Hence, option (c) is the correct answer.

45. The author is most likely to agree with the statement given to us in option (e) because the statement 'history of science can present multiple interpretations to people regarding the process of scientific developments' is closest to his own argument, which asks that history should be viewed in a different light from a different angle.

Hence, option (e) is the correct answer.

46. Giving top priority to core competence of production and marketing of tea does not mean that the company already possesses these core competences. This is the thinking that removes option (a) as a possible answer to the question.

Similarly, option (b) can be rejected [the causality drawn between increase in production to enhancing core competence is not implied in the passage];

Option (d) can also be rejected because the cause effect relationship is clearly upside down in option (d). It is likely that modernisation would lead to core competency and not the other way around as stated by this option;

and Option (e) can also be rejected as there is nothing to correlate the net profit of ` 5.49 crore to giving top priority to production.

Only option (c) is an implication that can be drawn from the given caselet as it is obviously implied that the company would try to increase core competence in order to further its own interests.

Hence, option (c) is the correct answer.

47. The paragraph clearly hints at something that an 'author' is reflecting on and then goes on to talk about what the author has said. Thus, this is clearly a review of an article or a book (we don't know which) on *Blue Ocean* strategy.

Hence, option (c) is the correct answer.

Section 3

Past Years' Solved Questions from the IIFT

•• IIFT 2011

•• IIFT 2010

•• IIFT 2009

•• IIFT 2008

•• IIFT 2007

INTRODUCTION TO REASONING IN THE IIFT EXAM

Reasoning has been an important component of the IIFT exam—always being one of the five or six sections in the exam.

The quality of questions in the reasoning section of the IIFT exam has normally been moderate—only rarely reaching the LOD III level of difficulty and also rarely touching the extremely easy levels. The other thing that one may point out about the IIFT exam is that out of 100 marks, the typical range of marks required in order to qualify the exam and get a call from the IIFT, Delhi has been in the range of 26 to 30 marks. Against this fact, the reasoning section has always has a weightage of between 15 marks to 25 marks—*which in effect goes to say that you can reach close to your qualifying score for the IIFT test just by solving the reasoning questions in the exam.*

The following question types have been prominently appearing in the IIFT exam over the past years. These are:

Selection criteria Syllogisms

Coding decoding

Sequences and series

Mathematical Symbols

Matching Puzzles

Team Selection (formation) puzzles

Statement—courses of action

Statement—assumptions

Statement—Conclusion

Direction

Input–Output

Quantitative Reasoning

Logical Deductions

An analysis of the question break up shows that the IIFT exam has tested candidates on a wide variety of reasoning skills (unlike the CAT and XAT, where the question variation in reasoning is limited).

Hence, it would not be out of place to say here that a well-rounded all round approach to reasoning might be a good place to start in your quest to dominate the important IIFT exam in the MBA entrance exam calendar.

Directions for Questions 1 to 3: Read the following instructions and answer the questions.

After a discussion at a high level meeting of government officers, the criteria for issuing of import/export licence to eligible business firms for the year 2011—12 were finalised as follows. The firms must—

- I. Have a Grade—A certified unit for any products.
- II. Not have any legal dispute case against it.
- III. Possess minimum assets worth ` 40 lakhs.
- IV. Submit an environment clearance certificate issued by the Pollution Control Board (PCB) of the state where the firm is located.
- V. Deposit the margin money of ` 1 lakh.
- VI. Arrange for three guarantors with their personal identity cards (IDs).

However, if the firm satisfies all the above mentioned criteria except:

- (a) Criteria (I), but is a traditional handloom production unit, then the case may be referred to Development Commissioner, Handloom (DCH) of the state.
- (b) Criteria (IV), but is a local employment provider/thread (input) supplier/cloth supplier, the case may be referred to the Director, Department of Industry of the state.
- (c) Criteria (V) but can deposit at least ` 50000, the firm will be given import licence only and the case may be referred to the Deputy Director, Department of Industry of the state.

Based on the above criteria and information provided on each of the firms in the questions below, you have to decide which course of action should be taken against each firm. Without assuming anything regarding any applicant firm, the decision should be based on the information provided.

1. Mahalaxmi Weaving Center is a traditional handloom production unit. It has property worth more than ` 1 crore. It managed to get three guarantors with their personal IDs. No legal case is there against it. There is no problem submitting an environmental clearance, as the same is already issued to it by the State Pollution Control Board. It is also ready to deposit ` 1 lakh.

- (a) Licence can be issued
 - (b) Licence not to be issued
 - (c) May be referred to the Development Commissioner, Handloom
 - (d) May be referred to the Director of Industry
2. Ramayan Enterprise is a textiles firm which possesses assets worth ` 50 lakhs and is located in Surat where no firm having any legal dispute is permitted to operate. The firm agreed to deposit ` 1 lakh and give details of three guarantors with their personal details as required. It has got grade-A certificate and can submit an environment clearance certificate issued by the Pollution Control Board of the state.
- (a) Licence can be issued
 - (b) Licence not to be issued
 - (c) May be referred to the Development Commissioner, Handloom
 - (d) May be referred to Deputy Director of Industry
3. Hirabhai Handlooms is a Vadodara based traditional Gujarati handloom firm keen to get an export licence. It is ready to pay the required security amount and possesses assets worth ` 55 lakhs. Hirabhai Chamanlal is the owner of the firm as well as the President of State Handloom Association. Hence getting more than three guarantors with their IDs is not a problem. The firm possesses the environmental clearance certificate from the State Pollution Control Board after it was made mandatory for all handloom firms in the state.
- (a) Licence can be issued
 - (b) Licence not to be issued
 - (c) May be referred to the Development Commissioner, Handloom
 - (d) May be referred to the Director of Industry

Directions for Questions 4 and 5: Each of the questions below starts with a few statements, followed by four conclusions numbered 1, 2, 3 and 4. You have to consider every given statement as true, even if it does not conform to the accepted facts. Read the conclusions carefully and then decide which of the conclusion(s) logically follow(s) from the given statements, disregarding commonly known facts.

4. Statements:
- (a) Some boys are scholars.
 - (b) Some teachers are boys.
 - (c) All scholars are observers.
- Conclusions:
- (a) Some scholars are boys.
 - (b) Some scholars are not boys.
 - (c) Some observers are boys.
 - (d) Some teachers are scholars.

Answer:

- (a) (a) and (c) follow
- (b) (a) (c) and (d) follow
- (c) Either (a) or (b) and (c) follow
- (d) None of the above

5. Statements:

- (a) All teachers are professors.
- (b) All professors are researchers.
- (c) All researchers are consultants.

Conclusions:

- (a) Some consultants are teachers.
- (b) All professors are consultants.
- (c) Some researchers are teachers.
- (d) All professors are teachers.

Answer:

- (a) Only (a) and (b) follow
- (b) Only (a) and (c) follow
- (c) Either (a) or (d) follow
- (d) None of the above

Directions for Questions 6 and 7: Study the information given below carefully to answer the following questions.

In a certain code language the following lines are written as:

- ‘lop eop aop fop’ means ‘Traders are above laws’;
- ‘fop cop bop gop’ means ‘Developers were above profitable’;
- ‘aop bop uop qop’ means ‘Developers stopped following traders’;
- ‘cop jop eop uop’ means ‘Following maps were laws’.

6. ‘Developers are following laws’ would be correctly written as

- (a) ‘bop cop uop eop’
- (b) ‘lop bop eop uop’
- (c) ‘oup cop lop aop’
- (d) None of the above

7. ‘qop gop cop eop’ would correctly mean:

- (a) Profitable laws were stopped

- (b) Developers stopped following laws
- (c) Traders were above profitable
- (d) None of the above

Directions for Questions 8 and 9: In each of the following letter series, some of the letters are missing, which are given below it. Choose the correct alternative.

8. D _ F _ DEE _ D _ EF _ DE _ F
- (a) EFFDED
 - (b) EFFDDF
 - (c) EFFDFE
 - (d) None of the above
9. _ OPO _ QOPQ _ RQPO _ POR _ O
- (a) APRQO
 - (b) QPORO
 - (c) QPROO
 - (d) None of the above

Directions for Questions 10 and 11: In each of the following questions, find the relationship that can definitely be deduced on the basis of the relations given. The symbols used to define the relationship are as follows:

@ means 'greater than'

means 'less than'

\$ means 'not equal to'

% means 'equal to'

10. If it is given that, $3 M \% 2 N$ and $N \% 3 O$, then:
- (a) $O @ M$
 - (b) $M \# O$
 - (c) $2 O \% M$
 - (d) None of the above
11. If it is given that, $N @ P$, $P \# O$, $O @ M$ and $N \% M$, then:
- (a) $O @ N$
 - (b) $O \# N$
 - (c) $O \$ N$
 - (d) None of the above

Directions for Questions 12 and 13: In each question given below, a statement is followed by three courses of action numbered 1, 2 and 3. You have to assume everything in the statement to be true, and then decide which of the three suggested courses of action logically follow(s).

12. Statement: School dropout rate is very high in the rural areas as children support their parents in income earning activities.

Courses of action:

- I. Public awareness programme on primary education should be expanded immediately to educate parents.
 - II. Compensation should be given to those parents whose children are in the school.
 - III. Law on universal education and ban on child labour should be made rigorous.
- (a) Only (I) and (II) follow

- (b) Only (II) and (III) follow
- (c) Only (I) and (III) follow
- (d) All follow

13. Statement: In a recent bulletin the Meteorological Department of India has forecasted severe drought in the next cropping season which may cause failure of crops.

Courses of action:

- I. The forecast should be widely published in media.
- II. The drought relief team should be ready for relief work.
- III. People should be advised to go for drought resistant variety.

- (a) Only (I) and (II) follow
- (b) Only (II) follows
- (c) Only (II) and (III) follow
- (d) None of the above

Directions for Questions 14 and 15: Read the following information carefully to answer the questions given below it.

Mr. Malhotra's family is a traditional joint family from Jalandhar with six persons from three generations. Each member of the family has different food preference and they support different sports/games. Only two couples are there in the family. Rakesh likes continental food and his wife neither likes dry fruits nor supports gymnastics. The person who likes egg supports Rugby and his wife likes traditional food. Mona is the mother-in-law of Sonalika and she supports Athletics. Varun is grandfather of Tarun and Tarun, who likes Punjabi food, supports Basketball. Nuri is the granddaughter of Mona and she supports Badminton. Nuri's mother supports horse riding.

14. Identify the correct pair of two couples from the following:

- (a) Mona-Varun and Rakesh-Sonalika
- (b) Varun-Mona and Rakesh-Nuri
- (c) Rakesh-Sonalika and Tarun-Nuri
- (d) Cannot be determined

15. Who likes Punjabi food, and what sport/game does he/she support?

- (a) Nuri, Badminton
- (b) Sonalika, horse riding
- (c) Tarun, Basketball
- (d) None of the above

Directions for Questions 16 and 17: Read the following paragraph and the conditions following it to answer the questions.

The Vice Chancellor of a University wants to select a team of five member organising committee for the next convocation of the University to be held in March 2012. The committee members are to be selected from five shortlisted professors (Prof. Ahuja, Prof. Banerjee, Prof. Chakravarty, Prof. Das and Prof. Equbal) and four short listed students (Prakash, Queen, Ravi and Sushil). Some condition

for selection of the committee members are given below:

- I. Prof. Ahuja and Sushil have to be together.
 - II. Prakash cannot be put with Ravi.
 - III. Prof. Das and Queen cannot go together.
 - IV. Prof. Chakravarty and Prof. Equbal have to be selected.
 - V. Ravi cannot be selected with Prof. Banerjee.
16. If two members of the committee are students and Prof. Das is one of the members of the committee, who are the other committee members?
- (a) Prof. Banerjee, Prof. Chakravarty, Prakash and Queen
 - (b) Prof. Ahuja, Prof. Banerjee, Sushil and Prakash
 - (c) Prof. Chakravarty, Prof. Equbal, Prakash and Sushil
 - (d) None of the above
17. In case Prof. Ahuja and Prof. Chakravarty are members, who are the other members who cannot be selected for the committee?
- (a) Prof. Banerjee, Prof. Equbal and Sushil
 - (b) Prof. Equbal, Sushil and Prakash
 - (c) Prof. Equbal, Prakash and Queen
 - (d) None of the above
18. If the word 'EXAMINATION' is coded as 56149512965, then the word 'GOVERNMENT' is coded as:
- | | |
|----------------|----------------|
| (a) 7645954552 | (b) 7654694562 |
| (c) 7645965426 | (d) 7654964526 |
19. In a certain code language 'HORSE' is written as 71417184, then the word 'MONKEY' is coded as:
- | | |
|-----------------|-----------------|
| (a) 11141216425 | (b) 12141310424 |
| (c) 12151411325 | (d) 12151210424 |

Directions for Questions 20 and 21: Read the following information carefully and mark the *correct* answer to the questions given below.

Sampada Apartment is a housing society formed by a group of professors of a University. It has six flats on a floor in two rows facing North and South which are allotted to Prof. Purohit, Prof. Qureshi, Prof. Rathor, Prof. Sawant, Prof. Tripathy and Prof. Usman. Prof. Qureshi gets a North facing flat and it is not next to Prof. Sawant's flat. Prof. Sawant and Prof. Usman get their flats which are diagonally opposite to each other. Prof. Rathor gets a south facing flat which is next to Prof. Usman's flat. Prof. Tripathy's flat is North facing.

20. Which of the following professors get South facing flats?
- (a) Prof. Qureshi, Prof. Tripathy and Prof. Sawant

- (b) Prof. Usman, Prof. Tripathy and Prof. Purohit
 (c) Prof. Usman, Prof. Rathor and Prof. Purohit
 (d) None of the above
21. If the flats of Prof. Tripathy and Prof. Purohit are interchanged, whose flat will be next to that of Prof. Usman?
 (a) Prof. Rathor (b) Prof. Tripathy
 (c) Prof. Usman (d) None of the above

Answer Key

1. (c)	2. (a)	3. (b)	4. (a)
5. (d)	6. (b)	7. (a)	8. (c)
9. (d)	10. (c)	11. (a)	12. (d)
13. (d)	14. (a)	15. (d)	16. (d)
17. (d)	18. (a)	19. (b)	20. (c)
21. (a)			

Solutions:

Solutions for Questions 1 to 3:

In these questions, for each of the situations described you have to check which of the conditions given in the original description matches and which ones do not match before you make a decision on either issuing a license, rejecting the license demand referring to the Development Commissioner, Handloom or referring to the Director of Industry.

Also it might benefit you in case you make a mental note in your mind to think of the option of referring to the Development Commissioner if and only if the firm is a “traditional handloom production unit” (of course the other condition being that the criteria of having a Grade A certified unit for any products (criteria I) is not met);

Also make a mental note that referral to Director Industry can happen under two circumstances:

- (i) Being a local employment provider/thread supplier/cloth supplier but not having an environmental clearance from the Pollution Control Board;
- (ii) Not able to deposit the sum of ` 1 Lakh but being able to deposit at least ` 50000 (additional point here being that in this case the firm would be able to get only an import license).

Based on the above structures and logical ‘forks’ set up in your mind you can then move onto the individual questions in the set.

1. The first sentence says that Mahalaxmi Weaving Center is a traditional handloom production unit. Once you read this, you should first look for whether it meets the “Grade A certification” criteria. As you read further you realise that it does not have a Grade A certification, as nothing is mentioned specifically about it. Thus, if it meets all the other criteria the case

would need to be referred to the Development Commissioner, Handloom. Checking for the other conditions, you can clearly see that the other conditions from II to VI are being met.

Thus, we refer the case to the Development Commissioner, Handloom and option (c) is the correct answer.

2. The first statement confirms that conditions II and III are met. The second statement confirm conditions V and VI, while the last statement about Ramayan Enterprise confirms that it meets conditions I and IV too. Since the firm meets all of the six conditions a license can be issued to the firm.

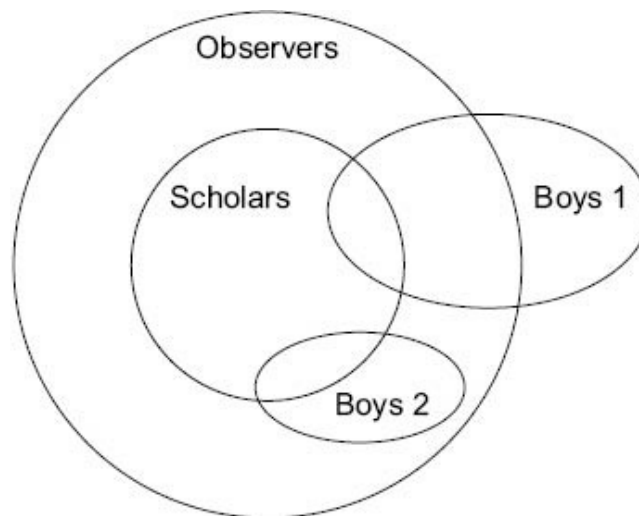
Option (a) is the correct answer.

3. For Hirabhai Handlooms, the moment you read the first statement (that it is a traditional Gujarati handloom firm) your immediate reaction should be to look for whether it also meets criteria I. If it does not meet that criteria but meets all other criteria we can conclude that the case may be referred to the Development Commissioner, Handloom.

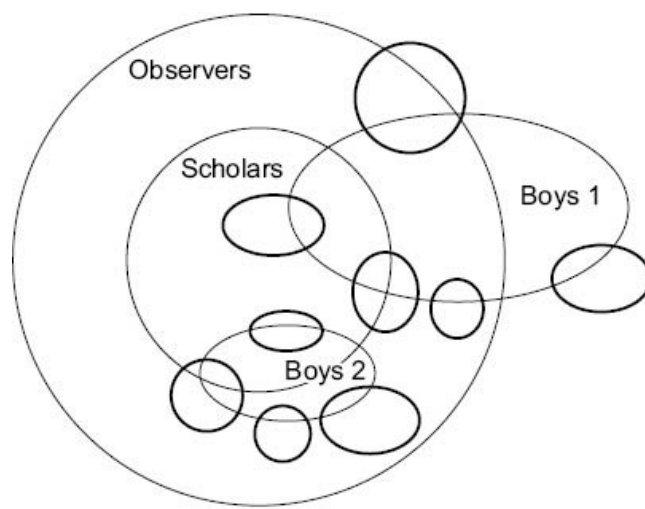
On scanning the remaining language it can be seen that it does not have a Grade A certified unit for any product. However, if we check for the other conditions, it can be seen that it does not meet condition II as it is not explicitly stated that it does not have any legal dispute against it. Since the question explicitly asks us to decide on the basis of the information provided about the firm and not to assume anything, we should take a decision of not issuing a license to the firm.

Option (b) is the correct answer.

4. The initial thought for this question is based on the figure below (Note: For the figure below, the circles for boys shown as boys 1 and boys 2 represent two possibilities about how boys could be placed and differ from each other in the context of the relationship that is shared between observers and boys.)



At this stage if you try to visualise where the teachers circle would be represented in the figure above, you would be able to visualise at least 4 to 5 places where the teacher's circle could be drawn. Some of these are represented in the modified figure below. Note that the darker circles shown in the figure below are some of the possibilities where "Teachers" could be placed vis-a-vis scholars and observers.



In order to decide which conclusions are definitely true, you must think of the conclusions which you cannot negate, no matter where you draw the teacher's circle.

Thus, for instance in this problem, it is clear that we cannot draw the teachers' circle in such a way that conclusion 1—some scholars are boys, is rejected (also realise that in order to reject 'some scholars are boys' you would need to have at least 1 feasible situation where no scholars are boys).

Thus, conclusion 1 is definitely true.

Similarly conclusion 3 (some observers are boys) cannot be rejected because we cannot draw even a single figure where no observers are boys.

Also understand here that conclusions 2 and 4 do get rejected and this can be seen on the basis of the following feasible diagram:

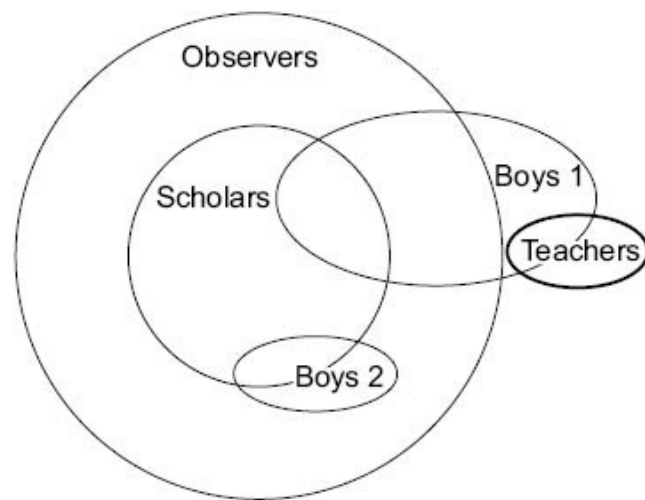
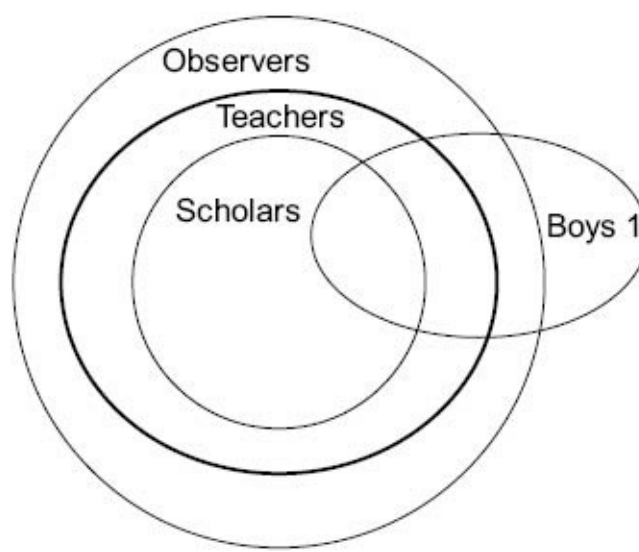


Figure rejecting conclusion 4, i.e. some teachers are scholars, by showing that no teachers are scholars is a feasible possibility in this situation.

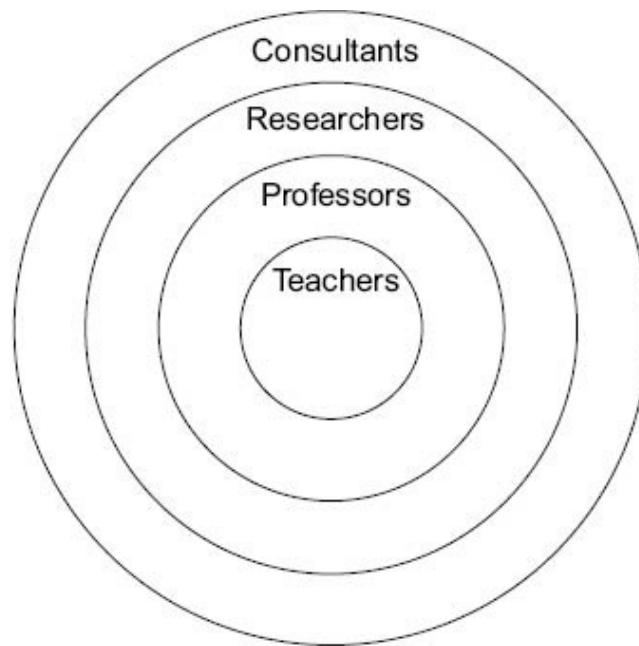
Similarly, the following possibility rejects conclusion 2—some scholars are not boys, by showing that it is possible that all scholars are boys.



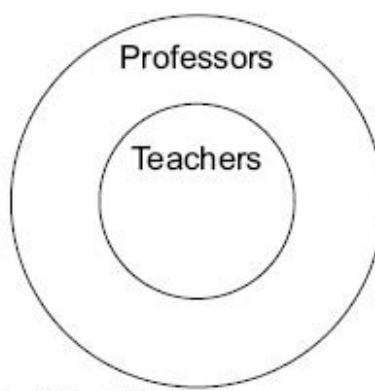
Thus, option (a) is the correct answer.

5. In this case, the solution figure is relatively less complex with a lower number of possibilities which you need to consider.

The most logical figure in this case is as seen below—fixing the relationships between Teachers, Professors, Researchers and Consultants.



Note here that the circles for any two consecutive variables could overlap each other in such a case as the relationship “All teachers are professors” essentially throws up two basic figures as shown below:



Possibility 1 for "All teachers are professors"

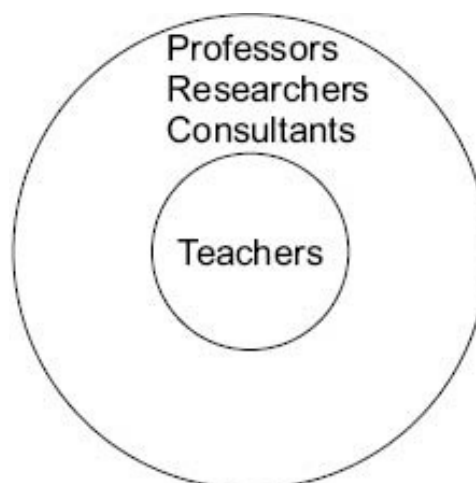


Possibility 2 for "All teachers are professors"

Based on this realisation, you can also visualise the other extreme for the problem solution figure, i.e. all the four circles overlap each other as shown below:



Or the following situation where three circles overlap each other as shown in the figure below where Professors, Researchers and Consultants overlap each other:



Based on these possible figures we can clearly see that none of the first three conclusions can be rejected. This is based on the following thought process:

Conclusion 1 is definitely true: We cannot reject ‘Some consultants are teachers’ as we cannot show ‘No consultants are teachers’.

Conclusion 2 is definitely true: We cannot reject ‘All professors are consultants’ as we cannot show ‘Some professors are not consultants’.

Conclusion 3 is also definitely true: We cannot reject ‘Some researchers are teachers’ as we cannot show ‘No researchers are teachers’.

Conclusion 4 is something that does not necessarily follow as we can clearly see in the figures above that while all professors are teachers is a possibility and would occur if the teacher and professor circles overlap each other, it is not something that is definitely true as we can clearly see that it is possible that some professors are not teachers as seen in the figure above where the four circles were different from each other.

Thus, the correct answer should state: 1, 2 and 3 are true. However, this option does not exist in the options given and hence the correct answer is option (d), i.e. none of these.

6. The following table can be drawn in order to get the information in place before we start drawing our conclusions:

Clue number	Phrase	Code
1	Traders are above laws	Lop eop aop fop
2	Developers were above profitable	Fop cop bop gop
3	Developers stopped following traders	Aop bop uop qop
4	Following maps were laws	Cop jop eop uop

Based on the information in the table above, we can make the following conclusions:

1. From Clues 1 and 3, we get that traders is the only common word between the two and code ‘aop’ is the only common code between clues 1 and 3. Thus, traders = aop.

Using the same logic and combining 2 statements at a time the following additional conclusions can be drawn:

- Using clues 3 and 4 we get: following = uop
- Using clues 1 and 2: above = fop
- Using clues 1 and 4: laws = eop
- Using clues 2 and 3: developers = bop
- Using clues 2 and 4: were = cop
- Using conclusions 1, 3 and 4 we get: are = lop
- Using conclusions 3, 4 and 5 we get: profitable = gop
- Using conclusions 1, 2 and 5 we get: stopped = qop
- Using conclusions 1, 3 and 4 we get: maps = jop

Based on these conclusions we can now solve questions 6 and 7.

For question 6 we have from the conclusions 5, 7, 2 and 4 that the codes used for the sentence “Developers are following laws” would be bop, lop, uop and eop. Option (b) matches this condition and hence is the correct answer.

7. For question 7 we have:

qop = stopped

gop = profitable

cop = were

and eop = laws

and hence the statement would be “Profitable laws were stopped”.

Option (a) is the correct answer.

Solutions for Questions 8 and 9:

8. Options (a) and (b) do not make any sense if they are put in the blanks of the series sequence: DEFFDEEFDDEFEDFD using the option (a) shows no consistent pattern.

Similarly the sequence DEFFDEEFDDEFDDEFF got by using the option (b) also shows no consistent pattern and hence can be rejected.

The sequence formed using option (c) is:

DEFFDEEFDDEFFDEEF. This sequence makes sense if you were to break the sequence in 3 terms at a time. You will get the sequence as:

DEF – FDE – EFD – DEF – FDE – EF

In the above sequence it can be seen that there is always a sequential order in which the three letters appear and also the second group of 3 alphabets starts from the last letter of the first group of 3 alphabets. And this trend continues uninterrupted throughout the sequence. Hence, we can mark option (c) as the correct answer.

9. The first three options give the following sequences:

(1) AOPOPQOPQRRQPOQPOROO—Makes no sense as the letter A has no role to play in the sequence.

(2) QOPOPQOPQORQPORPOROO—Again this sequence makes no sense as there is no logical pattern that can be spotted, especially with the logic of introducing R midway in the series. Also, no pattern can be spotted even on breaking the series into parts with 3, 4 or even 5 terms, 4 terms or even 5 terms in the series to break it into parts.

(3) QOPOPQOPQRRQPOOPOROO—Again, no pattern can be spotted as there is no logic for the introduction of R midway through the series.

Thus, option (d) is correct.

10. The relationships are:

$3M = 2N$ and $N = 3O \Rightarrow 3M = 6O$.

Thus, $4M = 2O$ which is represented as $2O \% M$ in option (c).

11. The relationships given in the problem are:

(i) $N > P$, (ii) $P < O$, (iii) $O > M$ and (iv) $N = M$.

Combining (i) and (iv) we get:

$N = M$ and hence both are greater than P .

At this point if we use the third relationship which tells us that O is greater than M we get a combined relationship as:

$O > M = N > P$.

Option (a) is the correct answer as $O @ N$ means $O > N$.

12. The first course of action follows because running an expanded public awareness programme on primary education is likely to have a positive impact on the way the parents are thinking about educating their children; and in the case of primary education the decision making essentially lies with the parents only as the child is too young to decide on his own.

The second course of action also follows, as giving a compensation to those parents whose children are in school is likely to substantially mitigate the 'negative' financial effect that sending the children to school is likely to have on the family's immediate short term financial condition.

The third course of action is also a logical one to be followed as strengthening laws on universal education and implementing the ban on child labour more rigorously is likely to dissuade parents from sending their children to work at an age when they should be in school.

Thus, all the three courses of action follow in this case and hence option (d) is the correct answer.

13. In this case too all the three courses of action are logical and hence each of them should be implemented.

The first course of action is valid because widely publishing the forecast in the media is likely to inform the relevant stakeholders of the impending situation and help them take their own preventive steps well in advance.

The second course of action too is logical as preparing the drought relief team and making it ready for relief work well in advance would improve the efficacy of the relief operations that they would be required to undertake in case the forecast comes true.

The third course of action is also obviously valid as advising people to go for drought resistant varieties would help them mitigate the negative financial effects of a failed crop.

If we check the options, none of the first three options gives us the option of selecting all courses of action. Thus, we select option (d) as the correct option.

Solutions for Questions 14 and 15:

This question can be classified under Family relationships.

Reaction Tracker:

Since there are three generations in the family we create a three level tabular structure; but with an uncertainty about the number of people in each generation.

Generation	Name of Males	Name of Females	Relationships	Likes
1st				
2nd				

3rd				

Once we have this, the first statement that can be used is the second last one which says that Nuri is the grand daughter of Mona and she supports Badminton. This statement in conjunction with the other information contained in the third last statement “Varun is grand father of Tarun and Tarun likes Punjabi food and supports basketball.”

With the composite use of this information we get the following tabular structure:

Generation	Name of Males	Name of Females	Relationships	Sport	Food
1st	Varun	Mona			
2nd					
3rd	Tarun	Nuri		Nuri – badminton Tarun – Basketball	Tarun – Punjabi food

From this point if we use the additional information in the last statement: “Nuri’s mother supports horse riding” as well as the information in the 5th statement: “Mona is the mother-in-law of Sonalika and she supports Athletics.” we get the following additional details filled up inside the table:

Generation	Name of Males	Name of Females	Relationships	Sport	Food
1st	Varun	Mona		Mona- athletics	
2nd		Sonalika	Sonalika is Mona’s daughter-in-law		
3rd	Tarun	Nuri		Nuri – badminton Tarun – Basketball	Tarun – Punjabi food

Further at this point we realise that we have only 1 more person whose name has not come into this family relationship chart. Looking into the unutilized clues in the question we realize that we have not used Rakesh’s name and neither the clue about Rakesh and his wife. If we were to put the information from there in the table we have above we would get the following augmented table:

Generation	Name of Males	Name of Females	Relationships	Sport	Food
1st	Varun	Mona		Mona- athletics	
2nd	Rakesh	Sonalika	Sonalika is Mona’s daughter in law & Nuri’s mother. Also Sonalika and Rakesh must be a married couple as it is clear that Rakesh is married and there are only 2 people in this generation so obviously he must be married to Sonalika only.	Sonalika- does not like gymnastics	Rakesh- continental food Sonalika- does not like dry fruits
3rd	Tarun	Nuri		Nuri –	Tarun –

badminton	Punjabi food
Tarun - Basketball	

At this point if we use the final information in the question: “The person who likes egg supports Rugby and his wife likes traditional food.” We realize that this person has to be male and among the males the only option left for whom we have not finalised the likings for either sport or food is Varun. Thus, the person referred to here must be Varun and his wife must be Mona. The table converts to the following:

Generation	Name of Males	Name of Females	Relationships	Sport	Food
1st	Varun	Mona	Varun and Mona are a couple	Varun-Rugby Mona-athletics	Varun – egg Mona-Traditional food
2nd	Rakesh	Sonalika	Sonalika is Mona’s daughter in law & Nuri’s mother. Also Sonalika and Rakesh must be a married couple as it is clear that Rakesh is married and there are only 2 people in this generation so obviously he must be married to Sonalika only.	Sonalika-does not like gymnastics	Rakesh-continental food Sonalika-does not like dry fruits
3rd	Tarun	Nuri		Nuri – badminton Tarun - Basketball	Tarun – Punjabi food

At this point we can now move to the questions in the set.

14. The two married couples are Varun-Mona and Rakesh-Sonalika.

Option (a) is correct.

15. Tarun likes Punjabi food and he supports Basketball. Option (d) is correct.

Solutions for Questions 16 and 17:

This question can be classified under team formations and the basic process in order to solve such questions is essentially to make a mental note of all the constraints that the problem set places for the selection and then look at the individual questions in the set and try to check out which combination does not disobey any of the constraints of the selection situation.

In this question, if we denote the professors as A, B, C, D and E while we denote the students as P, Q, R and S respectively we can note the constraints as follows:

- (a) A-S have to be together;
- (b) P—not with R;
- (c) D—not with Q;

(d) C and E have to be part of the 5 member team irrespective of anything else;

(5) R—not with B

With these constraints in front of us we can move on to solve the question set:

16. If there are three professors and D is one of them, we also know that the other two must be C and E. Further if D is selected, then amongst the four students P, Q, R and S we cannot select Q (due to constraint 3 shown above). This leaves us with only P, R and S for selection and two of them have to be selected as the question tells us that there are two students on the committee.

Also from the first constraint A & S have to be together. Since, A is not selected amongst the three professors, S would also not be eligible for selection. Thus, the two students have to be P and R.

The selection is C, E, D, P and R. Option (d) is the correct answer as none of the first three options gives us the C, E, D, P, R combination.

17. If A and C are selected, E would also be selected (as both C and E are to be compulsorily taken). Taking A would mean also taking S. Each of the first three options gets rejected for the people who **cannot** be selected because each of these contains E's name. Hence, option (d) is the correct answer.

18. The logic for EXAMINATION to be coded as 56149512965 is that each letter is represented by the sum of the digits of its position in the English alphabet. Thus, X being the 24th letter is represented by 6, E being the 5th letter is represented by 5, A = 1, M is the 13th letter and hence gets represented by 4 and so on. Thus, GOVERNMENT would become:

G = 7; O = 15th letter = 6; V = 22nd letter = 4; E = 5; R = 18th letter = 9; N = 14th letter = 5; M = 13th letter = 4; E = 5; N = 5 and T = 2.

Thus GOVERNMENT = 7645954552. Option (a) is the correct answer.

19. The logic for HORSE to be coded as 71417184 is that each letter is represented by a number which is 1 less than its position in the English alphabet. Thus, H being the 8th letter is coded as 7, while O being the 15th letter is coded as 14 and so on.

MONKEY by the same logic would become: 12141310424.

Option (b) is the correct answer.

Solutions for Questions 20 and 21:

The following initial diagram is where you can start your thought process for this question:

Flat Direction	Corner Flat	Middle Flat	Corner Flat	Professors facing South and North
South Facing Flats				
North Facing Flats				

Let the six professors be denoted as P, Q, R, S, T and U.

The first thing we should focus on doing is to identify which professors are in the North facing flats and which professors are in the South facing flats.

From the last two statements, viz: “R gets a south facing flat which is next to U's flat” and “T's flat is

North Facing” we can modify the diagram to the following.

Flat Direction	Corner Flat	Middle Flat	Corner Flat	Professors facing South and North
South Facing Flats				R, U
North Facing Flats				T

At this point we also know that “S and U get flats which are diagonally opposite to each other” and since we know that U faces South, S would naturally face North; and we can also deduce that both S and U must be occupying corner flats.

Flat Direction	Corner Flat	Middle Flat	Corner Flat	Professors facing South and North
South Facing Flats				R, U (corner flat)
North Facing Flats				T, S (corner flat)

Further from the statement: “Q gets a North facing flat and it is not next to S’s flat” we realise two things:

T, S, Q are in the three North facing flats and since S and Q are not adjacent to each other, they must be both occupying corner flats while T would be occupying the middle flat in the North facing flats. Consequently P would be in a South facing flat and the three people in South facing flats would be P, R, U. Also since R is next to U and we have already deduced that U is in the corner flat, we know that R would be in a middle flat.

The figure changes to the following:

Flat Direction	Corner Flat	Middle Flat	Corner Flat	Professors facing South and North
South Facing Flats				P (corner flat), R (middle flat), U (corner flat)
North Facing Flats				T (in middle flat), S & Q (corner flat)

Consequently we also realise that there are essentially the following 2 ways of arranging the 6 people:

Possibility 1:

Flat Direction	Corner Flat	Middle Flat	Corner Flat	Professors facing South and North
South Facing Flats	P	R	U	P (corner flat), R (middle flat), U (corner flat)
North Facing Flats	S	T	Q	T (in middle flat), S & Q (corner flat)

Possibility 2:

Flat Direction	Corner Flat	Middle Flat	Corner Flat	Professors facing South and North
South Facing Flats	U	R	P	P (corner flat), R (middle flat), U (corner flat)
North Facing Flats	Q	T	S	T (in middle flat), S & Q (corner flat)

Based on these reactions and deductions we can solve the questions.

20. P, R and U get South facing flats as deduced above and hence, option (c) is the correct answer.
21. From the final conclusions above, it is quite clear that there is no change in U's neighbour if P and T interchanged their flats. Option (a) is correct.

Directions for Questions 1 to 5: Read the following information and choose the right alternative in the questions that follow.

During the cultural week of an institute six competitions were conducted. The cultural week was inaugurated on the morning of 19th October, Wednesday and continued till 26th October. In the span of 8 days, six competitions namely debate, folk dance, fash-p, street play, rock band, and group song, were organized along with various other cultural programs. The information available from the institute is:

- I. Only one competition was held in a day.
 - II. Rock band competition was not conducted on the closing day.
 - III. Fash-p was conducted on the day prior to the debate competition.
 - IV. Group song competition was conducted neither on Wednesday nor on Saturday.
 - V. None of the competitions was conducted on Thursday and Sunday.
 - VI. The street Play competitions was held on Monday.
 - VII. There was a gap of two days between the debate competition and the group song competition.
1. The cultural week started with which competition?
 - (a) Fash-p competition
 - (b) Debate competition
 - (c) Street play competition
 - (d) Rock band competition
 2. How many days gap is there between rock band competition and group song competition?
 - (a) Two
 - (b) Three
 - (c) Four
 - (d) Five
 3. Which pair of competitions was conducted on Wednesday?

- (a) Rock band competition and debate competition
 - (b) Debate competition and fash-p competition
 - (c) Rock band competition and Folk dance competition
 - (d) None of these
4. Which competition exactly precedes the street play competition?
- (a) Rock band competition
 - (b) Group song competition
 - (c) Debate competition
 - (d) Fash-p competition
5. The Fash-p competition follows which competition?
- (a) Debate competition
 - (b) Street play competition
 - (c) Rock band competition
 - (d) None of these

Directions for Questions 6 to 8: Read the information given below and answer the questions that follow the information.

A parking lot can accommodate only six cars. The six cars are parked in two rows in such a way that the front of the three cars parked in one row is facing the other three cars in the other row.

- I. The Alto is not parked in the beginning of any row.
 - II. The Esteem is second to the right of *i10*.
 - III. Punto, which is the neighbour of Alto is parked diagonally opposite the *i10*.
 - IV. Swift is parked in front of Alto.
 - V. SX4 is parked to the immediate right of Alto.
6. If the SX4 and Esteem exchange their positions mutually then car(s) adjacent to Esteem is(are)?
- (a) *i10* and Swift
 - (b) Only Swift
 - (c) Only Alto
 - (d) Alto and Punto
7. If Alto changes position with *i10* and Punto changes position with SX4 and Swift shifts one position to the right to accommodate Beatle then the car(s) parked adjacent to Beatle is(are)?
- (a) Punto only
 - (b) *i10* and SX4
 - (c) Punto and Alto
 - (d) Alto and Swift
8. In the original parking scheme four new cars enter the parking lot such that Wagon-R is second to the right of *i10* and Zen is second to the left of SX4. Jazz is parked second to the left of Wagon-R and Beat is parked to the right of Alto, then the cars that moved out are?

Directions for Questions 9 to 13: Read the information given below and answer the next five questions that follow:

- I. Six friends Rahul, Kabeer, Anup, Raghu, Amit and Alok were engineering graduates. All six of them were placed in six different companies and were posted in six different locations, namely Tisco-Jamshedpur, Telco-Pune, Wipro-Bangalore, HCL-Noida, Mecon-Ranchi and Usha Martin-Kolkata. Each of them has their personal e-mail id's with different email providers, i.e., Gmail, Indiatimes, Rediffmail, Yahoo, Hotmail, Sancharnet, though not necessarily in the same order.
 - II. The one having e-mail account with Sancharnet works in Noida and the one having an e-mail account with Indiatimes works for Tisco.
 - III. Amit does not stay in Bangalore and does not work for Mecon, the one who works for Mecor has an e-mail id with Gmail.
 - IV. Rahul has an e-mail id with Rediffmail and works at Pune.
 - V. Alok does not work for Mecon and the one who works for Wipro does not have an e-mail account with Yahoo.
 - VI. Kabeer is posted in Kolkata, and does not have an account with Hotmail.
 - VII. Neither Alok nor Raghu work in Noida.
 - VIII. The one who is posted in Ranchi has an e-mail id which is not an account of Rediffmail or Hotmail.
 - IX. Anup is posted in Jamshedpur.
9. The man who works in Wipro has an e-mail account with:
- (a) Sancharnet
 - (b) Yahoo
 - (c) Rediffmail
 - (d) None of these
10. Which of the following e-mail-place of posting-person combination is correct?
- (a) Kabeer-Kolkata-Rediffmail
 - (b) Alok-Bangalore-Indiatimes
 - (c) Amit-Noida-Yahoo
 - (d) Raghu-Ranchi-Gmail
11. Which of the following is true?
- (a) Amit is posted at Ranchi.
 - (b) Raghu is posted at Jamshedpur.
 - (c) Kabeer has an e-mail id with Yahoo.
 - (d) Rahul has an e-mail id with Indiatimes.
12. Which of the following sequences of location represent Alok, Kabeer, Anup, Rahul, Raghu and Amit in the same order?

- (a) Bangalore, Noida, Pune, Jamshedpur, Ranchi, Kolkata
 (b) Bangalore, Kolkata, Jamshedpur, Pune, Noida, Ranchi
 (c) Kolkata, Bangalore, Jamshedpur, Pune, Noida, Ranchi
 (d) None of these
13. People who have an e-mail account with Indiatimes, Sancharnet and Yahoo work for which companies, in the same sequence as the e-mail accounts mentioned.
 (a) Usha Martin, HCL, Wipro
 (b) Tisco, Wipro, Usha Martin
 (c) HCL, Tisco, Wipro
 (d) Tisco, HCL, Usha Martin
14. How many 'zeroes' are there in the following sequence which are immediately preceded by a nine but not immediately followed by seven?
 7090070890702030045703907
 (a) One (b) Two
 (c) Three (d) Four

Answer Key

1. (d)	2. (d)	3. (d)	4. (b)
5. (c)	6. (c)	7. (d)	8. (d)
9. (d)	10. (d)	11. (c)	12. (d)
13. (d)	14. (a)		

Solutions:

Solutions for Questions 1 to 5:

The first thing you should do in this case is to build the most relevant structure to place the information. Since, the question talks about the week from 19th October to 26th October, we can build the following starting grid in order to place the information of the question:

Day	Date	Competition
Wednesday	19	
Thursday	20	
Friday	21	
Saturday	22	
Sunday	23	

Monday	24	
Tuesday	25	
Wednesday	26	

Once you have visualised the above table, you can now move on to the direct clues which can be fit into the table at this point. These are:

Clue number (V): No Competition conducted on Thursday and Sunday.

Clue number (VI): Street Play conducted on Monday

Putting these two clues in the above grid you would get the following:

Day	Date	Competition
Wednesday	19	
Thursday	20	xxxx
Friday	21	
Saturday	22	
Sunday	23	xxxx
Monday	24	Street Play
Tuesday	25	
Wednesday	26	

Once you have placed this information inside the grid you should look for the next clues that are usable directly at this point. In case you cannot use exactly one clue directly:

You should first look for a mixture of two clues which can give you some direct information to move ahead with your solution;

OR if such a thing cannot be found;

You should look for a clue that gives you multiple possibilities and move ahead with your solution process by considering each of the possibilities from that point. For instance, clue (VII) at this poin gives you 4 possibilities of placing debate competition and group song as it says that there is a gap of 2 days between the two. These possibilities can be seen as under:

Possibilities 1 and 2 arise out of placing group song and debate on 19th and 22nd as shown below:

Day	Date	Competition
Wednesday	19	Group song/Debate
Thursday	20	xxxx
Friday	21	
Saturday	22	Debate/Group song

Sunday	23	xxxx
Monday	24	Street Play
Tuesday	25	
Wednesday	26	

Possibilities 3 and 4 arise out of placing group song and debate on 22nd and 25th as shown below:

Day	Date	Competition
Wednesday	19	
Thursday	20	xxxx
Friday	21	
Saturday	22	Group song/Debate
Sunday	23	xxxx
Monday	24	Street Play
Tuesday	25	Debate/Group song
Wednesday	26	

At this point if you try to use clue (III) Fash-p was conducted on the day prior to debate competition, you realise that it is not possible to have debate on either 25th or on 19th as both these days do not have anything on the day prior to them.

Thus, debate has to be placed on 22nd and Group song can move to either 19th or 25th.

We now have the following two possibilities which are still feasible at this point:

Possibility 1:

Day	Date	Competition
Wednesday	19	
Thursday	20	xxxx
Friday	21	Fash-p
Saturday	22	Debate
Sunday	23	xxxx
Monday	24	Street Play
Tuesday	25	Group song
Wednesday	26	

Possibility 2:

Day	Date	Competition
Wednesday	19	Group song
Thursday	20	xxxx
Friday	21	Fash-p
Saturday	22	Debate
Sunday	23	xxxx
Monday	24	Street Play
Tuesday	25	
Wednesday	26	

But Possibility 2 can be rejected due to the fact that it contradicts clue (IV).
Thus, we get the following definite structure:

Day	Date	Competition
Wednesday	19	
Thursday	20	xxxx
Friday	21	Fash-p
Saturday	22	Debate
Sunday	23	xxxx
Monday	24	Street Play
Tuesday	25	Group song
Wednesday	26	

This can be further completed by using clue (II) at this point, viz: Rock band is not conducted on the closing day. With this the table gets completed.

Day	Date	Competition
Wednesday	19	Rock Band
Thursday	20	xxxx
Friday	21	Fash-p
Saturday	22	debate
Sunday	23	xxxx
Monday	24	Street Play

Tuesday	25	Group song
Wednesday	26	Street Play

The answers can now be read off from the above table.

1. The fashion week started with the Rock Band competition. Option (d) is the correct answer.
2. There are 5 days between the rock band and group competition. Option (d) is the correct answer.
3. The two Wednesdays are 19th and 26th and on these days the Rock band competition and the Street play competition were held. Option (d) is the correct answer.
4. The Group song competition precedes the Street play competition. Option (b) is the correct answer.
5. Fashion week competition follows the Rock Band competition. Option (c) is the correct answer.

Solutions for Questions 6 to 8:

Again for this question, the first thing you should do is to create the visual structure of the problem situation. The following grid would define the situation.

First Row			
Second Row			

Using clues (III) and (V), we get that SX4, Alto and Punto are parked in one row. Also, we know from Clue (III) that Punto is diagonally opposite i10. This gives rise to two essential possibilities:

Possibility 1:

First Row			i10
Second Row	Punto	Alto	SX4

Possibility 2:

First Row	SX4	Alto	Punto
Second Row	i10		

Note: We have been able to deduce that Alto is in the middle parking of it’s row using the combination of clues (III) and (V). Although Clue (I) also tells us that, we really do not need that clue and this you should recognize as a case of what can be called redundant information.

To the current grid if we add the information we get from Clue (II) that tells us that Esteem is second to the right of i10, and from Clue (IV) which tells us that Swift is in front of Alto, we can complete the picture as follows:

Possibility 1:

First Row	Esteem	Swift	i10
Second Row	Punto	Alto	SX4

Possibility 2:

First Row	SX4	Alto	Punto
Second Row	i10	Swift	Esteem

From this point we can move into the questions as we have already used up all the information given in the clues.

6. If SX4 and Esteem interchange their position, then the car(s) adjacent now to SX4 would become adjacent to Esteem.

Since, Alto is adjacent to SX4 currently (in both the possibilities), we can conclude that only Alto would be adjacent to Esteem after the switch. The situation can be visualised as follows:

Possibility 1:

First Row	SX4	Swift	i10
Second Row	Punto	Alto	Esteem

Possibility 2:

First Row	Esteem	Alto	Punto
Second Row	i10	Swift	SX4

Option (c) is the correct answer.

7. After the interchanges as defined: Alto with i10 and Punto with SX4, the possibility grids would look as below:

Possibility 1:

First Row	Punto	Swift	Alto
Second Row	SX4	i10	Esteem

Possibility 2:

First Row	Esteem	i10	SX4
Second Row	Alto	Swift	Punto

From this position if Swift shifts right it would obviously have to displace Punto from the parking lot and the Beatle would take the position which Swift is currently occupying. The new grid after this change would look like:

Possibility 2:

First Row	Swift	Beatle	Alto
Second Row	SX4	i10	Esteem

Possibility 2:

First Row	Esteem	i10	SX4
Second Row	Alto	Beatle	Swift

In this situation we can clearly see that Alto and Swift are next to the Beatle.
Option (d) is the correct answer.

8. Wagon-R replaces Esteem, i10 gets replaced by Jazz, Zen replaces the Punto and Bea replaces the SX4. The figures now look like:

Possibility 1:

First Row	Wagon-R	Swift	Jazz
Second Row	Zen	Alto	Beat

Possibility 2:

First Row	Beat	Alto	Zen
Second Row	Jazz	Swift	Wagon-R

In both cases, the Alto and the Swift are two cars which remain in the parking lot. Thus, options (a), (b) and (c) cannot be true with respect to the cars which moved out. Hence, we select option (d) as the correct answer.

Solutions for Questions 9 to 13:

Again like for all puzzle questions, the key is to define the visual structure of the solution. Clue (I) gives you the input as to how you would need to structure the solution grid. The starting solution grid should look something like below:

Name	Company	Location	Email provider
	TISCO	Jamshedpur	
	Telco	Pune	
	Wipro	Bangalore	
	HCL	Noida	
	Mecon	Ranchi	
	Usha Martin	Kolkata	

From this point first try to fix the positioning of the direct clues into the grid.
Clues (IV), (VI) and (IX) are usable directly in the above table.
These clues about Rahul, Kabeer and Anup help us move further into our solution grid which would now look as below.

Name	Company	Location	Email provider
Anup	TISCO	Jamshedpur	
Rahul	Telco	Pune	Rediffmail
	Wipro	Bangalore	
	HCL	Noida	
	Mecon	Ranchi	
Kabeer	Usha Martin	Kolkata	Not Hotmail

From this point you realise that since we have to place only 3 more people in their correct cities/companies we can use the clue (VII) in order to realise that since neither Alok nor Raghu work in Noida it only leaves us with Amit who must be in Noida. The table modifies to:

Name	Company	Location	Email provider
Anup	TISCO	Jamshedpur	
Rahul	Telco	Pune	Rediffmail
	Wipro	Bangalore	
Amit	HCL	Noida	
	Mecon	Ranchi	
Kabeer	Usha Martin	Kolkata	Not Hotmail

Now use clue (V) to place Alok and Raghu in the two remaining places. Since Alok does not work for Mecon, he must be working for Wipro and consequently Raghu would be working for Mecon. The solution grid now becomes:

Name	Company	Location	Email provider
Anup	TISCO	Jamshedpur	
Rahul	Telco	Pune	Rediffmail
Alok	Wipro	Bangalore	Not Yahoo
Amit	HCL	Noida	
Raghu	Mecon	Ranchi	
Kabeer	Usha Martin	Kolkata	Not Hotmail

We should now concentrate on fixing the email providers for the six people. For this Clue (I) is very useful at this point as it helps us fix two email providers in the above grid. We can also use clue (VIII) at this point to fix that Ranchi-Mecon-Raghu is not Hotmail.

The solution grid now becomes:

Name	Company	Location	Email provider
Anup	TISCO	Jamshedpur	Indiatimes
Rahul	Telco	Pune	Rediffmail
Alok	Wipro	Bangalore	Not Yahoo
Amit	HCL	Noida	Sancharnet
Raghu	Mecon	Ranchi	Not Hotmail
Kabeer	Usha Martin	Kolkata	Not Hotmail

Analysing the above situation we can clearly see that three of the six email providers are now fixed leaving the other three to be fixed. These are Hotmail, Yahoo and Gmail.

Also we can see in our solution grid at this point that Hotmail cannot be put for Raghu-Mecon-Ranchi nor for Kabeer-Usha Martin-Kolkata and that leaves us with only Alok-Wipro-Bangalore where Hotmail can be matched.

The solution grid now becomes:

Name	Company	Location	Email provider
Anup	TISCO	Jamshedpur	Indiatimes
Rahul	Telco	Pune	Rediffmail
Alok	Wipro	Bangalore	Hotmail
Amit	HCL	Noida	Sancharnet
Raghu	Mecon	Ranchi	Yahoo/Gmail
Kabeer	Usha Martin	Kolkata	Gmail/Yahoo

Clue (III) helps us place that Gmail is for Mecon. Thus the final solution becomes:

Name	Company	Location	Email provider
Anup	TISCO	Jamshedpur	Indiatimes
Rahul	Telco	Pune	Rediffmail
Alok	Wipro	Bangalore	Hotmail
Amit	HCL	Noida	Sancharnet
Raghu	Mecon	Ranchi	Gmail
Kabeer	Usha Martin	Kolkata	Yahoo

The answers can now be read off the above table:

9. The man who works for Wipro has an email account with Hotmail. Option (d) is the correct answer.
10. Raghu-Ranchi-Gmail is the only correct combination amongst the 4 options. Option (d) is the correct answer.
11. Kabeer has an email-id with Yahoo is the correct statement. The other options are incorrect. Option (c) is the correct answer.
12. Option (a) is incorrect as Kabeer is in Kolkata and not in Noida.
Option (b) is incorrect as Amit is in Noida and not in Ranchi as this options says.
Option (c) is incorrect as Alok is in Bangalore and not in Kolkata.
Thus, option (d) is the correct answer.
13. The person with the Indiatimes email-id works for TISCO while the one with the Sancharnet email account works for HCL and the one with the Yahoo email-id works for Usha Martin. Option (d) is the correct answer.
14. In the sequence 7090070890702030045703907 there is only one 'zero' which satisfies the given condition as can be seen through the bold digits below: 70**9**0070890702030045703907. Option (a) is the correct answer.

Directions for Questions 1 to 3: Study the following information carefully and answer the questions. Four houses Blue, Green, Red and Yellow are located in a row in the given order. Each of the houses is occupied by a person earning a fixed amount of a salary. The four persons are Paul, Krishna, Laxman and Som.

- I. Paul lives between Som and Krishna.
 - II. Laxman does not stay in the Blue house.
 - III. The person living in the Red house earns more than the person living in the Blue house.
 - IV. The salary of Som is more than that of Paul but lesser than that of Krishna.
 - V. One of the person earns ` 80,000.
 - VI. The person earning ` 110,000 is not Laxman.
 - VII. The salary difference between Laxman and Som is ` 30,000.
 - VIII. The house in which Krishna lives is located between the houses with persons earning salaries of ` 30,000 and ` 50,000.
 - IX. Krishna does not live in the Yellow house, and the person living in yellow house is not earning the lowest salary among the four persons.
1. Who lives in the Red house?
 - (a) Paul
 - (b) Krishna
 - (c) Laxman
 - (d) Som
 2. Which house is occupied by the person earning the highest salary?
 - (a) Blue
 - (b) Green
 - (c) Red
 - (d) Yellow
 3. What is the salary earned by the person living in the Green house?
 - (a) ` 30,000
 - (b) ` 50,000

(c) ` 80,000

(d) Rs.110,000

4. Mr Raghav went in his car to meet his friend John. He drove 30 kms towards north and then 40 kms towards west. He then turned to south and covered 8 kms. Further he turned to east and moved 26 kms. Finally he turned right and drove 10 kms and then turned left to travel 19 kms. How far and in which direction is he from the starting point?
- (a) East of starting point, 5 kms
(b) East of starting point, 13 kms
(c) North East of starting point, 13 kms
(d) North East of starting point, 5 kms
5. Mr. Raju took the members of his family for a picnic. His father's mother and mother's father including their two children were in one car. His father's son, sister's husband and brother's wife were in the second car. He along with his wife, wife's sister, wife's brother and son's wife with a kid was in the third car. How many members of Mr. Raju's family were there in the picnic along with Mr. Raju and how many were left behind (assuming all members of the third generation are married)?
- (a) 13 and 4
(b) 14 and 5
(c) 12 and 5
(d) 13 and 6
6. A, B, C, D and E play a game of cards. A tells B that if B gives him five cards A will have as many cards as E has. However if A gives five cards to B then B will have as many cards as D. A and B together have 20 cards more than what D and E have together. B has four cards more than what C has and the total number of cards are 201. How many cards does B have?
- (a) 185
(b) 37
(c) 175
(d) 27
7. Ganesh Cultural Centre for Promoting Arts has appointed 3 instructors for music, dance and painting. The music instructor takes session from 12 noon to 4:00 pm on Monday, Thursday and Sunday. Dance sessions are scheduled on Tuesday, Thursday, Wednesday and Sunday between 10:00 am to 2:00 pm. The 9:00 am to 12 noon slot on Tuesday, Friday and Thursday and also 2:00 pm to 4:00 pm slot on Wednesday, Saturday and Sunday is filled up by Painting Instructor. On which day(s) of a week are the dance and painting sessions held simultaneously?
- (a) Sunday and Wednesday
(b) Tuesday and Friday
(c) Tuesday and Thursday
(d) Only on Tuesday

Directions for Questions 8 to 10: Study the information given below and answer the questions.

A word arrangement machine, when given a particular input, rearranges it using a particular rule. The following is the illustration and the steps of the arrangement

INPUT:	Smile	Nile	Style	Mile	Shine	Wine	Mine	Swine	Bovine	Feline
STEP 1:	Smile	Nile	Style	Mile	Shine	Wine	Bovine	Feline	Mine	Swine
STEP 2:	Style	Mile	Smile	Nile	Shine	Wine	Bovine	Feline	Mine	Swine
STEP 3:	Style	Mile	Smile	Nile	Wine	Shine	Bovine	Feline	Mine	Swine
STEP 4:	Mile	Style	Nile	Smile	Wine	Shine	Feline	Bovine	Swine	Mine
STEP 5:	Nile	Smile	Mile	Style	Wine	Shine	Swine	Mine	Feline	Bovine
STEP 6:	Nile	Smile	Mile	Style	Wine	Shine	Feline	Bovine	Swine	Mine
STEP 7:	Mile	Style	Nile	Smile	Wine	Shine	Feline	Bovine	Swine	Mine

8. Which of the following will be step 14 for the given input?
- Style Mile Smile Nile Wine Shine Bovine Feline Mine Swine
 - Smile Nile Style Mile Shine Wine Mine Swine Bovine Feline
 - Mile Style Nile Smile Shine Wine Feline Bovine Swine Mine
 - Style Mile Smile Nile Shine Wine Bovine Feline Mine Swine
9. Mark the arrangement that does not fall between step numbers 12 and 14.
- Style Mile Smile Nile Wine Shine Bovine Feline Mine Swine
 - Mile Style Nile Smile Wine Shine Feline Bovine Swine Mine
 - Style Mile Smile Nile Shine Wine Bovine Feline Mine Swine
 - Smile Nile Style Mile Shine Wine Bovine Feline Mine Swine
10. If the arrangement is repeated, which of the steps will be the same as the INPUT row?
- Step 9
 - Step 11
 - Step 20
 - Step 14

Directions for Question 11: Study the information given below and answer the questions.

A Prime Minister is contemplating the expansion of his cabinet. There are four ministerial berths and there are eight probable candidates (C1–C8) to choose from. The selection should be in a manner that each selected person shares a liking with at least one of the other three selected members. Also, the selected candidates must also hate at least one of the likings of any of the other three persons selected.

- C1 likes travelling and sightseeing, but hates river rafting.
- C2 likes sightseeing and squash, but hates travelling.
- C3 likes river rafting, but hates sightseeing.
- C4 likes trekking, but hates squash.
- C5 likes squash, but hates sightseeing and trekking.
- C6 likes travelling, but hates sightseeing and trekking.
- C7 likes river rafting and trekking, but hates travelling, and
- C8 likes sightseeing and river rafting, but hates trekking.

11. Who are the four people selected by the Prime Minister?
- (a) C1, C2, C5, C6
 - (b) C3, C4, C5, C6
 - (c) C1, C2, C4, C7
 - (d) None of the above

Answer Key

1. (b)
2. (c)
3. (a)
4. (c)
5. (d)
6. (Inconsistent data)
7. (c)
8. (b)
9. (b)
10. (d)
11. (c)

Solutions:

Solutions for Questions 1 to 3:

In order to solve any puzzle kind of question, the first thing you have to think about is the best pictorial representation which would make it convenient to solve the question.

In this context, you realise when you read the question set that there are essentially 4 variables in this question viz: The house position and the house colour, the person’s name and the salary of the individual. Out of these you realise from the starting statement of the problem itself that the relationship between the house colour and position is fixed (“Four houses Blue, Green, Red and Yellow are located in a row in the given order.”)

Accordingly, your starting grid structure should look like this:

Position	1st	2nd	3rd	4th
Colour of house	Blue	Green	Red	Yellow
Name of person				
Salary				

Note that the 1st and 4th houses in the row are corner houses and have only 1 neighbour.

Once you create this grid structure, you need to first look at any direct clues within the clues provided. Scanning the 9 clues at this point you can see that all the clues are indirect clues and cannot be used directly in the current grid structure. The next thing you try to do is to try to use two clues in combination with each other. The first and second clues used together provide you with this opportunity.

Analysis of clues (I) and (II):

The first clue tells us that “Paul lives between Som and Krishna”.

This gives us an initial thought that these three can occupy the houses 1, 2, 3 in the row with Paul occupying the 2nd house and Som and Krishna sharing houses 1 and 3 in no particular order. In this

case Laxman has to occupy the 4th house, i.e. the Yellow house.

OR they can occupy the houses 2,3,4 with Paul occupying the 3rd house and Som and Krishna sharing houses 2 and 4 in no particular order. In this case Laxman has to occupy the 1st house, i.e. the Blue house. However, since we know from Clue (II) that Laxman does not stay in the Blue house we reject this possibility.

Consequently, we can fix the position of Paul and Laxman in the Green and Yellow houses respectively.

Position	1st	2nd	3rd	4th
Colour of house	Blue	Green	Red	Yellow
Name of person	Som/Krishna	Paul	Krishna/Som	Laxman
Salary				

At this point if we use Clue (VIII), we see that since “Krishna lives in between two houses” he cannot be in the first house. Hence, Krishna takes the third house and Som takes the 1st one.

Thus, the grid converts to:

Position	1st	2nd	3rd	4th
Colour of house	Blue	Green	Red	Yellow
Name of person	Som	Paul	Krishna	Laxman
Salary				

From this point we need to focus on fixing the values of the salaries of the 4 individuals.

The values of the four salaries can first be identified as 30000, 50000 (from Clue VIII), 80000 (Clue V) and 110000 (Clue VI). We also know from Clue VIII that Krishna lives between the people earning 30000 and 50000 which means that 30000 and 50000 could be Laxman and Paul’s salary.

Further, the salary difference between Laxman and Som being 30000, their salaries would have to be 50000 and 80000, with Laxman getting 50000 and Som getting 80000. Consequently Paul gets 30000 and Krishna would earn 110000. The solution grid would then look like below:

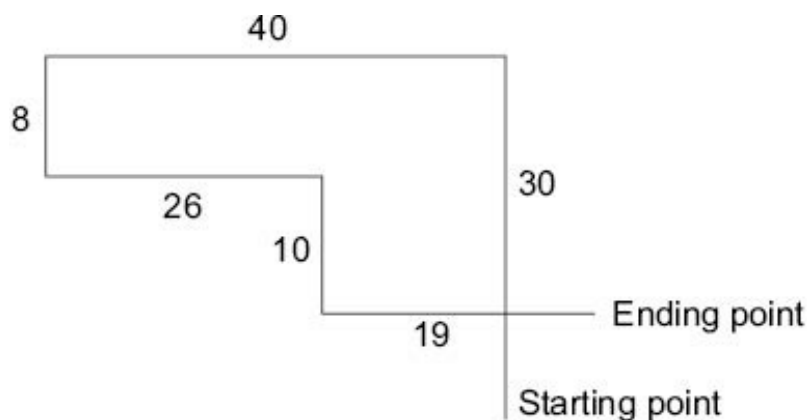
Position	1st	2nd	3rd	4th
Colour of house	Blue	Green	Red	Yellow
Name of person	Som	Paul	Krishna	Laxman
Salary	80000	30000	110000	50000

The solutions can then be read off from the above as:

1. Krishna lives in the red house. Option (b) is correct.
2. The person earning the highest salary is Krishna and he lives in the Red house. Option (c) is correct.

3. The salary of the person in the green house is ` 30000. Option (a) is correct.

4.



From the above figure it is evident that the ending point is 12 kms north and 5 km east of the starting point. Consequently, the ending point would be 13 km North East of the starting point.

5. The following describes the cars and their occupants:

Car 1: Grandmother (paternal), grandfather (maternal), Father and Mother

Total 4 people with two missing—paternal grandfather and maternal grandmother.

Car 2: Brother, brother's wife and sister's husband. Total 3 people with 1 missing, viz: Sister.

Car 3: Raju and his wife; wife's sister, wife's brother, Raju's son's wife and Raju's grandson. Total six people with 3 missing—wife's sister's husband, wife's brother's wife and son.

Thus, we can see that there are a total of 13 people going to the picnic and 6 people are being left behind. Option (d) is correct.

6. The data is inconsistent in this question as we get that A has 5 cards lesser than E (i.e. $E-5$) while B has 5 cards lesser than D (i.e. $D-5$). This means that A and B together would have 10 cards less than D and E; but the problem states that A and B have 20 cards more than D and E. Hence, this question has inconsistent data and hence cannot be solved.

7. From the information given in the question the following table can be drawn of the week's schedule of activities:

Day	Music	Dance	Painting
Monday	12 to 4		
Tuesday		10 to 2	9 to 12
Wednesday		10 to 2	2 to 4
Thursday	12 to 4	10 to 2	9 to 12
Friday			9 to 12
Saturday			2 to 4
Sunday	12 to 4	10 to 2	2 to 4

From the above table it can be seen that Dance and Painting are held simultaneously on Tuesday and Thursday – as Dance overlaps with Painting on both these days.

Solutions for Questions 8 to 10:

The given input output string is such that in seven steps we get the following interchanges:

1, 2, 3, 4 are switched to 4, 3, 2, 1. 5, 6 becomes 6, 5 and 7, 8, 9 and 10 becomes 10, 9, 8, 7. Thus, by step 14 the same changes would occur again, i.e., reversal of each of the strings, viz: 4, 3, 2, 1 will become 1, 2, 3, 4, 6, 5 will become 5, 6 and 10, 9, 8, 7 will become 7, 8, 9, 10.

Based on this analysis we can solve the questions.

8. Consequently step 14 would go back to the original arrangement, viz: Smile, Nile, Style Mile, Shine, Wine, Mine, Swine, Bovine, Feline.

Option (b) is correct.

9. Steps 12 to 14 would be the reverse order of steps 2, 1 and input. Option (b) is not a part of any of steps 1 or 2 and is not the input too. Thus, Option (b) is the correct answer.

10. Step 14 would be the same as the input row as it would completely reverse all the changes that have happened from steps 1 to 7. Option (d) is correct.

11. The first option of the team of C1, C2, C5 and C6 does not meet the required condition as C1 hates only river rafting which no one likes.

Similarly option (b) is also not correct as C3's liking is not shared by anyone else.

Option (c) is correct because in the combination of C1, C2, C4 and C7, each of the four people has at least 1 person who shares his/her liking while the hate of each of the 4 people is liked by at least 1 person. Thus, all conditions are met in this case and this is the correct answer.

Option (c) is correct.

1. Three children won prizes in the 'Tech India Quiz' contest. They are from three schools: Lancer, Columbus and Leelavati, which are located in different states. One of the children is named Binod. Lancer school's contestant did not come first. Leelavati school's contestant's name is Rahman. Columbus school is not located in Andhra Pradesh. The contestant from Maharashtra got third place and is not from Leelavati School. The contestant from Karnataka did not secure first position. Columbus school's contestant's name is not Badal.

Which of the following statements is TRUE?

- (a) 1st prize: Rahman (Leelavati), 2nd prize: Binod (Columbus), 3rd prize: Badal (Lancer)
 - (b) 1st prize: Binod (Columbus), 2nd prize: Rahman (Leelavati), 3rd prize: Badal (Lancer)
 - (c) 1st prize: Rahman (Leelavati), 2nd prize: Badal (Lancer), 3rd prize: Binod (Columbus)
 - (d) 1st prize: Binod (Columbus), 2nd prize: Badal (Lancer), 3rd prize: Rahman (Leelavati)
2. Mother Dairy sells milk packets in boxes of different sizes to its vendors. The vendors are charged ` 20 per packet for up to 2000 packets in a box. Additions can be made only in a lot size of 200 packets. Each addition of one lot to the box results in a discount of one rupee on all the packets in the box. What should be the maximum size of the box that would maximise the revenue per box for Mother Dairy?
- (a) 2400 packets
 - (b) 3000 packets
 - (c) 4000 packets
 - (c) None of the above.
3. All employees have to pass through three consecutive entrance doors to enter into the office and one security guard is deployed at each door. These security guards report to the manager about those who come to office after 10 am. Ms. Rani is an employee of this office and came late on the annual day. In order to avoid report to the manager she had to pay each security guard half of the money she had in her purse and 2 rupees more besides that. She found only one rupee with her at the end. How much money Ms. Rani had before entering the office on the

annual day?

(a) ` 40

(b) ` 36

(b) ` 25

(d) ` 42

Directions for Questions 4 and 5: Answer the questions based on the following information.

The director of an institute wants to distribute teaching assignments of HRM, Psychology Development Studies, Trade Policy and Finance to five of six newly appointed faculty members. Prof. Fotedar does not want any assignment if Prof. Das gets one of the five. Prof. Chaudhury desires either HRM or Finance or no assignment. Prof. Banik opines that if Prof. Das gets either Psychology or Trade Policy then she must get the other one. Prof. Eswar insists on an assignment if Prof. Acharya gets one.

4. Which of the following is a valid faculty-assignment combination if all the faculty preferences are considered?
- (a) Prof. Acharya - HRM, Prof. Banik - Psychology, Prof. Chaudhury - Development Studies, Prof. Das - Trade Policy, Prof. Eswar - Finance
 - (b) Prof. Chaudhury - HRM, Prof. Das - Psychology, Prof. Acharya - Development Studies, Prof. Banik - Trade Policy, Prof. Eswar - Finance
 - (c) Prof. Acharya - HRM, Prof. Banik - Psychology, Prof. Eswar - Development Studies, Prof. Das - Trade Policy, Prof. Fotedar - Finance
 - (d) Prof. Banik - HRM, Prof. Fotedar - Psychology, Prof. Eswar - Development Studies, Prof. Chaudhuri - Trade Policy, Prof. Acharya - Finance
5. If Prof. Acharya gets HRM and Prof. Chaudhury gets Finance, then which of the following is not a the correct faculty-assignment combination assuming all faculty preferences are considered?
- (a) Prof. Das - Development Studies, Prof. Banik - Trade Policy
 - (b) Prof. Fotedar - Development Studies, Prof. Banik - Trade Policy
 - (c) Prof. Banik - Development Studies, Prof. Eswar - Trade Policy
 - (d) Prof. Banik - Development Studies, Prof. Das - Trade Policy

Directions for Questions 6 to 8: Answer the questions based on the following information.

Five women decided to go for shopping to South Extension, New Delhi. They arrived at the designated meeting place in the following order: 1. Aradhana, 2. Chandrima, 3. Deepika, 4. Heena and 5. Sumitra. Each of them spent at least ` 1000. The woman who spent ` 2234 arrived before the woman who spent ` 1193. One of them spent ` 1340 and she was not Deepika. One woman spent ` 1378 more than Chandrima. One of them spent ` 2517 and she was not Aradhana. Heena spent more than Deepika. Sumitra spent the largest amount and Chandrima the smallest.

6. What was the amount spent by Heena?
- (a) ` 1193
 - (b) ` 1340
 - (c) ` 2234
 - (c) ` 2517
7. Which of the following amount is spent by one of the women?

(a) ` 1139

(b) ` 1378

(c) ` 2571

(d) ` 2518

8. The lady who spent ` 1193 is:

(a) Aradhana

(b) Chandrima

(c) Deepika

(d) Heena

Directions for Questions 9 to 11: Answer the questions based on the following information.

In a motor race competition certain rules are given for the participants to follow. To control direction and speed of the motorists, guards are placed at different signal points with caps of different colour. The guard with red cap indicate the direction of participant's movement and guards with green cap indicates the speed of the participant's movement. At any signal point presence of three guards, two guards and one guard with red cap means the participant must stop, turn left and turn right respectively. Signal points with three guards, two guards and one guard with green cap means the participants must move at 10, 4 and 2 km/hour respectively.

Kartikay, one of the participants, starts at a point where his car was heading towards north and he encountered signals as follows: at start point one guard with green cap; after half an hour two guards with red cap and two guards with green cap at the first signal; after fifteen minutes one guard with red cap at second signal; after half an hour one guard with red cap and three guards with green caps at the third signal; after 24 minutes two guards with red cap and two guards with green cap at fourth signal; after 15 minutes three guards with red cap at fifth signal. (Time mentioned in each case is applicable after crossing the previous signal).

9. The total distance travelled by Kartikay from starting point till the last signal is:

(a) 9 km

(b) 10 km

(c) 8 km

(d) 12 km

10. What would be the final position of Kartikay if one guard with red cap and two guards with green caps were placed at the first signal point after the starting point?

(a) 3 km to the west and 2 km to the south

(b) 3 km to the west and 4 km to the north

(c) 5 km to the east and 4 km to the north

(d) 2 km to the west and 4 km to the south

11. If at the starting point Kartikay was heading towards south what would be his final position?

(a) 3 km to the east and 4 km to the south

(b) 5 km to the east and 4 km to the south

(c) 3 km to the west and 4 km to the south

(d) 5 km to the west and 2 km to the north

Directions for Questions 12 to 15: Answer the questions based on the following information.

Mr. Mansingh has five sons – Arun, Mahi, Rohit, Nilesh and Saurav, and three daughters – Tamanna,

Kuntala and Janaki. Three sons of Mr. Mansingh were born first followed by two daughters. Saurav is the eldest child and Janki is the youngest. Three of the children are studying at Trinity School and three are studying at St. Stefan. Tamanna and Rohit study at St. Stefan school. Kuntala, the eldest daughter, plays chess. Mansorover school offers cricket only, while Trinity school offers chess. Besides these the schools offer no other games. The children who are at Mansorover school have been born in succession. Mahi and Nilesh are cricketers while Arun plays football. Rohit who was born just before Janki, plays hockey.

12. Arun is the _____ child of Mr. Mansingh.
- (a) 2nd (b) 3rd
(c) 6th (d) 5th
13. Saurav is a student of which school?
- (a) Trinity (b) St. Stefan
(c) Mansorover (d) Cannot be determined
14. What game does Tamanna play?
- (a) Cricket (b) Hockey
(c) Football (d) Cannot be determined
15. Which of the following pairs was not born in succession (ignore the order)?
- (a) Mahi and Nilesh (b) Kuntala and Arun
(c) Rohit and Janki (d) Arun and Rohit

Directions for Questions 16 and 17: Answer the questions based on the following information.

In each question below three statements (I, II, III) are given followed by four conclusions numbered 1, 2, 3 and 4. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements, disregarding commonly known facts. Choose the correct options given below.

16. Statements:
- I. Some drivers are technicians
II. All technicians are engineers
III. Some engineers are lecturers
- Conclusions:
1. Some technicians are lecturers
2. Some lecturers are drivers
3. All engineers are technicians
4. Some engineers are drivers
- (a) Only 3 follows

- (b) Only 4 follows
- (c) Only 3 and 4 follows
- (d) None of the above

17. Statements:

- I. Some barbers are fashion designers
- II. No fashion designers are businessmen
- III. Some businessmen are traders

Conclusions:

- 1. No Fashion designers are traders
- 2. Some traders are not fashion designers
- 3. Some fashion designers are traders
- 4. Some barbers are not businessmen

- (a) Either 1, 2 and 4 or 3, 2 and 4 follow
- (b) Either 1 and 4 or 3 and 4 follow
- (c) Either 1 and 2 or 3 and 2 follow
- (d) None of the above

18. Pointing to Priya, father of Pritu says, 'She is the daughter of the daughter of the wife of the only son of the grandfather of my sister.' How is Sushma related to Priya if Sushma is the sister of Pritu?

- (a) Mother
- (b) Aunt
- (c) Niece
- (d) None of the above

Directions for Questions 19 and 20: Answer the questions based on the following information.

To get admission in a management course at Dadhichi Institute of Management (DIM) following criteria are given. A candidate must:

- 1. be a graduate from a recognised university with minimum 54 percent marks.
- 2. not be more than 33 years of age as on 1.4.2008.
- 3. have secured 60 per cent or more marks in the entrance test.
- 4. pay one-time deposit fee of ` 2,00,000 at time of admission.
- 5. pay tuition fee of Rs.4,000 per month.

Any candidate who fails to fulfill condition (4) above, he/she may be referred to the Chairman-Admission. Any candidate who has scored 80 per cent marks in the entrance test but does not fulfill condition (1) above, he/she may be referred to the Director.

Any candidate having work experience of at least 10 years in supervisory cadre does not satisfy but condition (2) above, he/she may be admitted under the sponsored quota.

Given the above information and condition in each of the following questions, you have to decide

which of the following course of action should be taken. You should not assume anything in case of any of the candidates. Mark answer

- I. if the candidate is admitted
- II. if the candidate is not admitted
- III. if the candidate is referred to the Director
- IV. if the candidate is referred to the Chairman-Admission
- V. if the candidate is admitted under sponsor quota

19. Kamaljeet secured 60 per cent marks in graduation and was born on 15th April 1976. He scored 56 per cent marks in the entrance test. He can pay one-time deposit of ` 2,00,000 and monthly tuition fee of ` 4,000.

- (a) I (b) II
- (c) III (d) IV

20. Gourav is a first-class science graduate who obtained 81 per cent marks in the entrance test. He has 12 years of work experience in the supervisory cadre. He can pay the stipulated one-time deposit and monthly tuition fees. His date of birth is 20th October, 1970.

- (a) I (b) IV
- (c) III (d) V

Directions for Questions 21 to 23: Read the following information and answer the questions given below it. For selection of films produced before December 2007 for the National Film Festival of India, following criteria are given.

- 1. The film must be submitted to the National Film Development Corporation (NFDC) by 31.10.2007.
- 2. The production cost of the film should not exceed Rupees Five crores.
- 3. The director of the film should have passed a three year course either from the Film and Television Institute of India (FTII) or from Satyajit Ray Film & Television Institute.
- 4. The length of the film should not exceed 150 minutes.
- 5. The film must have been approved by the film censor board of India.
- 6. However, if the film fulfils all the above criteria except
 - (a) criteria 2 above, it must be sent to the Finance Secretary.
 - (b) criteria 3 above, the director has done at least a one year course from FTII or Satyajit Ray Film & Television Institute, the film is kept as a stand-bye.

On the basis of the above information and information provided below, decide the course of action in each case. No further information is available. You are not to assume anything. Mark answer

- I. if the film is to be selected
- II. if the film is not to be selected
- III. if the film should be sent to the Finance Secretary
- IV. if the film should be kept as a stand-bye

V. if the data given about the film are not adequate to make a decision.

21. Film Dainandini was produced at the cost of Rupees 2.5 crore. It was submitted to the NFDC on 29th September 2007. The director of the film Govind Chadha passed a 3-year course from FTII. Length of film was 120 minutes and has been approved by the censor board of India.
- (a) I (b) II
(c) IV (d) V
22. Bhadrasalam is a 135-minute film directed by Katyani, who was a student of Satyajit Ray Film & Television Institute from 1996 to 1999. The cost of producing the film was Rupees 2.3 crore and it was submitted to NFDC on 24th July 2007. The film has been approved by the censor board of India.
- (a) I (b) V
(c) III (d) IV
23. Rakesh Mohan, the director of film Ek Bar Achanak, has successfully completed a 2-years course at Satyajit Ray Film & Television Institute. The 150-minute film was produced at a cost of Rupees 4.85 crore. It was been approved by the censor board of India and submitted to NFDC on 30th Nov. 2007.
- (a) I (b) III
(c) IV (d) II

Directions for Questions 24 to 27: Answer the questions based on the following information.

A number arrangement machine, when given a particular input, rearranges it following a particular rule. Illustrations of the input and the steps of arrangement are given below.

Input: 245, 316, 436, 519, 868, 710, 689

Step 1: 710, 316, 436, 519, 868, 245, 689

Step 2: 710, 316, 245, 519, 868, 436, 689

Step 3: 710, 316, 245, 436, 868, 519, 689

Step 4: 710, 316, 245, 436, 519, 868, 689

Step 4 is the last step for the given input.

24. If the input is given as “655, 436, 764, 799, 977, 572, 333”, which of the following step will be “333, 436, 572, 655, 977, 764, 799”?
- (a) Step 3 (b) Step 2
(c) Step 4 (d) None of the above
25. How many steps will be required to get the final output from the following input?
- Input: 544, 653, 325, 688, 461, 231, 857
- (a) 6 (b) 5
(c) 4 (d) None of the above
26. Step 3 for an input is “432, 433, 542, 666, 734, 355, 574” What will be the first step for the

input?

- (a) 666, 542, 432, 734, 433, 574, 355
- (b) 542, 666, 734, 432, 433, 574, 355
- (c) 355, 574, 433, 432, 734, 666, 542
- (d) Cannot be determined

27. What will be the third step for the following input?

Input: 653, 963, 754, 345, 364, 861, 541

- A. 541, 345, 754, 963, 364, 816, 653
- B. 541, 345, 364, 653, 963, 754, 861
- C. 541, 345, 364, 963, 754, 861, 653
- D. 541, 345, 364, 653, 861, 754, 963

Directions for Questions 28 to 30: Answer the questions based on the following information.

A word arrangement machine, when given a particular input, rearranges it following a particular rule. Following is the illustration of the input and the steps of arrangement:

Input: She was interested in doing art film

Step 1: art she was interested in doing film

Step 2: art was she interested in doing film

Step 3: art was in she interested doing film

Step 4: art was in film she interested doing

Step 5: art was in film doing she interested

Step 5 is the last step of the given input. Now study the logic and rules followed in the above steps and find out the appropriate step for the questions given below for the given input.

28. Which of the following will be the last step for the input given below?

Input: he is going out to search air

- (a) out is air to going search he
- (b) out is air to search going he
- (c) search he out is air to going
- (d) None of the above

29. If Step 2 of an input is not “not is the casino considering legal action”, which step is: “not is casino action legal the considering?”

- (a) Step 3
- (b) Step 6
- (c) Step 4
- (d) None of the above

30. How many steps will be required to get the final output from the following input?

Input: Father needs to check on the boy

(a) Four

(b) Five

(c) Six

(d) None of the above

31. Among Anil, Bibek, Charu, Debu, and Eswar, Eswar is taller than Debu but not as fat as Debu. Charu is taller than Anil but shorter than Bibek. Anil is fatter than Debu but not as fat as Bibek. Eswar is thinner than Charu, who is thinner than Debu. Eswar is shorter than Anil. Who is the thinnest person?

(a) Bibek

(b) Charu

(c) Debu

(d) Eswar

32. Pointing to a photograph Yuvraj says, “He is the only brother of the only daughter of my sister’s maternal grandmother.” Pointing to another photograph Sourav says, “he is the only brother of the only daughter of my sister’s maternal grandmother.” If among the two photographs, one was either of Sourav or Yuvraj, and the photograph, towards which Yuvraj was pointing, was not of Sourav, then how is Yuvraj related to Sourav?

(a) Paternal uncle

(b) Maternal uncle

(c) Grandfather

(d) None of the above

Answer Key

1. (a) and (c)	2. (b)	3. (b)	4. (b)
5. (d)	6. (b)	7. (a)	8. (c)
9. (a)	10. (a)	11. (c)	12. (c)
13. (a)	14. (d)	15. (b)	16. (b)
17. (d)	18. (d)	19. (b)	20. (d)
21. (a)	22. (b)	23. (d)	24. (a)
25. (b)	26. (d)	27. (b)	28. (b)
29. (d)	30. (d)	31. (d)	32. (b)

Solutions:

1. The following grid structure needs to be created for this question:

Prize	School	State	Contestant Name
1			
2			
3			

The first direct clue is that the contestant from Maharashtra got the third place. It is also given

in that statement that he is not from the Leelavati school. If we insert this information into our grid we get the following figure:

Prize	School	State	Contestant Name
1			
2			
3	Lancer/Columbus	Maharashtra	

The next couple of clues we use are:
Leelavati school’s contestant is named Rahman. Also, it is given to us that Columbus school’s contestant is not Badal. Hence, The contestant from Columbus school would be Binod.
Thus, we know the contestant names from each of the three schools:
Leelavati-Rahman; Columbus-Binod; Lancer-Badal.
However, this information is not usable directly into our table at this point of time.
At this point we also know that the contestant from Karnataka did not come first and that the third contestant is from Andhra Pradesh.
Using this information into our current table we get:

Prize	School	State	Contestant Name
1		Andhra Pradesh	
2		Karnataka	
3	Lancer/Columbus	Maharashtra	

We further know that:
(i) The Lancer School’s contestant did not come first and
(ii) Columbus school is not located in Andhra Pradesh.
It follows that the contestant from Andhra Pradesh must be from Leelavati and must be the winner.
The table become:

Prize	School	State	Contestant Name
1	Leelavati	Andhra Pradesh	Rahman
2		Karnataka	
3		Maharashtra	

We now need to fix the positions for Lancer-Badal and Columbus-Binod. However, looking at the clues we can see that there is no way to find out who comes second and who comes third.
Thus, there are two possible solution tables:

Prize	School	State	Contestant Name

1	Leelavati	Andhra Pradesh	Rahman
2	Lancer	Karnataka	Badal
3	Columbus	Maharashtra	Binod

OR

Prize	School	State	Contestant Name
1	Leelavati	Andhra Pradesh	Rahman
2	Columbus	Karnataka	Binod
3	Lancer	Maharashtra	Badal

Thus, both options (a) and option (c) are correct.

2. The revenue chart can be constructed according to the given discount structure as follows:

Number of packets	Price per packet	Revenue	
2k	20	40k	
2.2k	19	41.8k	10% increment in number of packets and 5% reduction in price per packet → revenue goes up
2.4k	18	43.2k	1/11 increment in number of packets and 1/19 reduction in price per packet Æ revenue goes up
2.6k	17	44.2k	1/12 increment in number of packets and 1/18 reduction in price per packet Æ revenue goes up
2.8k	16	44.8k	1/13 increment in number of packets and 1/17 reduction in price per packet Æ revenue goes up
3k	15	45	1/14 increment in number of packets and 1/16 reduction in price per packet Æ revenue goes up
3.2k	14	44.8k	1/15 increment in number of packets and 1/15 reduction in price per packet Æ revenue comes down
			Subsequently it can be seen that revenue would progressively reduce.

Thus, at an order of 3000 packets, the revenue would be maximised.

3. Using trial and error with the options we get that if she started with ` 36 she would have Re.1 with her at the end based on the following thought process:

Original amount	Amount after the first security guard	Amount after the second security guard	Amount after the third security guard
36	16	6	1

Solutions for Questions 4 and 5:

In this situation, we essentially have to understand each of the constraints and check whether the constraints are being met by the option. The constraints in the problem can get identified as follows from what is stated in the question:

CONSTRAINT 1: The statement “Prof.Fotedar does not get an assignment if Prof. Das gets one should be interpreted as—we can give an assignment to either Das or Fotedar and not to both. This also means that of the 6 people, since we have to provide an assignment to 5, the one to be left out has to be either Das or Fotedar.

Thus, Acharya, Banik, Chaudhary and Eswar must always be selected for an assignment.

CONSTRAINT 2: We also know that Chaudhary has to be given either HRM or Finance.

CONSTRAINT 3: The other constraint in the problem is that if we give an assignment to Das (from either Trade Policy or Psychology), Banik should get the other one. Once we realise these points we can solve the questions individually.

4. The first option fails as it gives us a situation where Chaudhary gets Development Studies- whereas we know that he has to be given either HRM or Finance.
The second option satisfies all conditions while the third one fails as it gives both Das as well as Fotedar an assignment.
The fourth option is also wrong as Chaudhary does not get either HRM or Finance. Thus Option (b) is correct.
5. Clearly the option (d) is incorrect as it gives Das Trade Policy but it does not give Banik Psychology.

Solutions for Questions 6 to 8:

From the given information it is clear that four numbers which must have been the values of money spent would be: 2517 (clue 4), 2234 (clue 1), 1340 (clue 2) and 1193 (clue 1 again).

We need to work out the fifth value.

Also, since Chandrima is the least and Sumitra is the max and since one woman spent 1378 more than Chandrima a little bit of introspection will give you the following possibilities for the five numbers:

Possibility 1: If 1193 is the least value

A The five numbers are:

1193, 1340, 2234, 2517 and 2571 (since $2571 = 1193 + 1378$)

Possibility 2: If 2517 is the maximum value

1139 (since $1139 = 2517 - 1378$), 1193, 1340, 2234 and 2517

Accordingly we have the following possible arrangements for the five women and the amount they spent:

	Possibility 1	Possibility 2
A (x 2517)	2234	
C (least)	1193	
D (x 1340)	2517	
H	1340	
S (Max)	2571	

Note: The thought structure for placing the 5 values with 5 women in the case of possibility 1, goes as follows:

Step 1:

A	
C	1193
D	
H	
S	2571

After Placing the least and maximum.

Step 2: 2234 should be before 1193 and Deepika has not spent 1340.

A	2234
C	1193
D	2517
H	1340
G	2571

A close look at the above table shows that clue 5 ($H > D$) is not obeyed by this arrangement. Hence, this solution is wrong.

We thus move into possibility 2 i.e.:

1139, 1193, 1340, 2234, 2517, are the five values. The thought structure for placing the five numbers for the five women goes as:

Step 1: Place the maximum and least values for G and C respectively.

A	(x 2517)	
C	(least)	1139
D	(x 1340)	
H		
G	(Maximum)	2517

This leaves us with 1340, 1193 and 2234 to place.

Step 2: We need to keep 2 constraints in mind while doing this.

(a) 2234 has to come before 1193 (remember not = immediately before). At the same time $H > D$. (Clue 5)

We can arrange 2234 before 1193 in 3 ways as shown below and then 1340 automatically falls into the vacant space.

	1	
A	2234	
C	1139	
D	1193	
H	1340	
G	2517	

(Not possible since Deepika cannot be 1340)

A	2234
C	1139
D	1340
H	1193
G	2517

3

(Not possible since H should be greater than D).

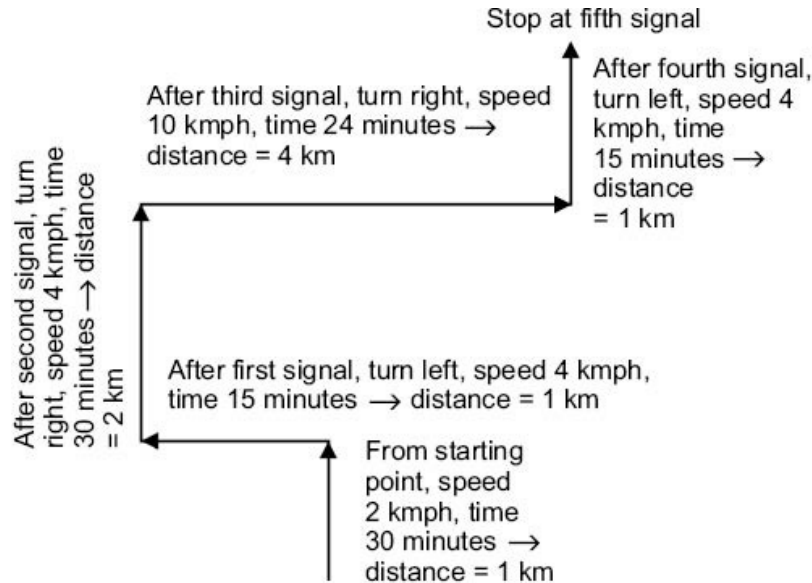
A	1340
C	1139
D	2234
H	1193
G	2517

Hence, the only possible arrangement is as in (1) above. Hence the answers are:

6. (b) Heena spent ` 1340.
7. (a) ` 1139
8. (c) Deepika

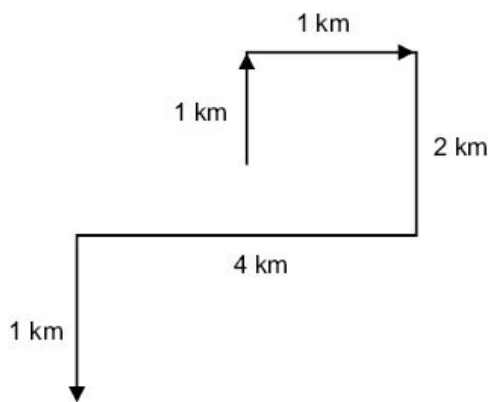
Solutions for Questions 9 to 11:

9. The basic structure of the movement that Kartikay would exhibit would look as follows:



Thus, the total distance he would travel would be 9 km. Option (a) is correct.

10. If the first signal had 1 guard with red cap and 2 guards with green cap he would need to turn right at the first signal. His speed for this part of the journey would not get affected. Also, it would not affect his subsequent turns and his subsequent distances too.
- His journey path would look as below and it can be clearly seen that he would be 3 km west and 2 km south at the end of his journey.



Option (a) is the correct answer.

11. If he were heading south the figure would change from the figure in the 9th question and it would just be the inverse of the figure in the 9th question, i.e. everytime he is moving north in the figure for the 9th question he would move south for this question and every time he is moving east he would now be moving west. Also, every time he is moving west he would now be moving east.

Hence, the final result would also be the opposite of the final position in question 9. In the figure for question 9 it can be seen that Kartikay ends up 4 km north and 3 km east. Hence, for this question his final position would be 3 km west and 4 km south. Option (c) is correct.

Solutions for Questions 12 to 15:

Based on an initial reading of the question set it is clear that there are three variables, which are being measured. These are the order in which the children are born, the game they play and the School they go to. Besides the sex of the child is another variable being measured. Also, the boys can be represented by A,M,R,N,S while the girls can be represented by T,K,J. Based on these realisations, the starting grid structure for the given question would look like below:

Order of birth	Name of child	Sex of child	Sport	School
1				
2				
3				
4				
5				
6				
7				
8				

With this starting point we start using the information in the question. The first direct clue is Saurav is the eldest while Janki is the youngest. Besides, we also know that Mr. Mansingh first had three sons and then had two daughters in succession. With this information placed into the grid, we would get the following:

Order of birth	Name of Child	Son/Daughter	Sport	School
1	Saurav	Son		
2		Son		
3		Son		
4		Daughter		
5		Daughter		
6		Son		
7		Son		
8	Janaki	Daughter		

We then know that Kuntala is the eldest daughter and she plays chess and that Rohit was born just before Janaki- and he plays hockey. Also, Tamanna and Rohit study at St.Stefan.

Order of birth	Name of Child	Son/Daughter	Sport	School
1	Saurav	Son		
2		Son		
3		Son		
4	Kuntala	Daughter	Chess	
5	Tamanna	Daughter		St. Stefan
6		Son		
7	Rohit	Son	Hockey	St. Stefan
8	Janaki	Daughter		

At this point, from the statement that three of the children are studying at Trinity school and three are studying at St.Stefan we also know that two students are studying at Mansarovar. Also, we know that these two must be born in succession and since Mansarovar school offers only cricket it follows that Mahi and Nilesh must be from the Mansarovar school and that they must be placed second and third in the birth order. This also means that Arun’s position gets fixed as the sixth child.

We also know that Trinity only offers chess (as it is given that “these schools offer no other games.) The table evolves to:

Order of birth	Name of Child	Son/Daughter	Sport	School
1	Saurav	Son	Chess	Trinity
2	Mahi/Nilesh	Son	Cricket	Mansarovar
3	Nilesh/Mahi	Son	Cricket	Mansarovar

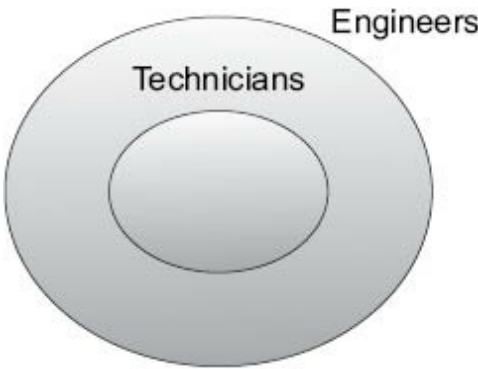
4	Kuntala	Daughter	Chess	Trinity
5	Tamanna	Daughter		St. Stefan
6	Arun	Son	Football	St. Stefan
7	Rohit	Son	Hockey	St. Stefan
8	Janaki	Daughter	Chess	Trinity

The answers can be read off the table:

- 12. Arun was born sixth. Option (c) is correct.
- 13. Saurav studies at Trinity. Option (a) is correct.
- 14. Tamanna’s game we cannot determine. Option (d) is correct.
- 15. Kunatala and Arun were not born in succession. Option (b) is correct.

Solutions for Questions 16 and 17:

- 16. The figure for “all technicians are engineers” will look as below:

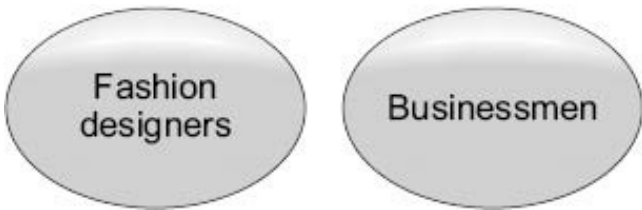


Since some drivers are technicians it follows that the circle for drivers would necessarily intersect the circle for technicians.

This means that some (or all) drivers would be engineers and also that some engineers would definitely be drivers.

Conclusion 4 definitely follows.

- 17. The figure for “No fashion designers are businessmen” is



Once you have the above picture in front of you, you can try to visualise the circles for barbers and for traders.

The first conclusion – no fashion designers are traders, is rejected as we can draw an intersection area between traders and fashion designers.

Similarly the third conclusion cannot be regarded as necessarily true as we can easily visualise a circle for traders such that no fashion designers are traders.

Conclusions 2 and 4 are true and the thinking for this is:

Conclusion 2: Traders who are businessmen would definitely not be fashion designers and hence conclusion 2 is valid.

Conclusion 4: Barbers who are fashion designers are necessarily not businessmen and hence the conclusion “Some barbers are not businessmen” is a valid conclusion.

Looking at the options, there is no option which gives us 2 and 4 as correct. Thus, Option (d) is the correct answer.

Solutions for Questions 18:

“Only son of the grandfather of my sister” – refers to my father.

Hence, “wife of the only son” refers to “wife of father” which means “mother”.

Further, Priya being the daughter of the daughter of the mother, means that Priya is Pritu’s mother’s grand daughter. Also, since Pritu’s sister is Sushma, it follows that Priya might be either the daughter of Pritu in which case Sushma would be Priya’s aunt or otherwise Priya might be the daughter of Sushma in which case Sushma would be Priya’s mother. Hence, the correct answer should be “either aunt or mother” and hence option (d) is correct.

Solutions for Questions 19 and 20:

In order to solve these kinds of questions it is normally a good idea to put all the requirements for admission in the given situation in one place.

The requirements in this case are:

- (i) Graduate with minimum 54% marks but this can be bypassed by getting 80% marks in the entrance test in such a situation the case may be referred to the Director.
- (ii) Not more than 33 years of age as on 1.4.2008 which can be bypassed if a candidate has at least 10 years of experience in the supervisory cadre;
- (iii) Scoring 60% or more marks in the entrance test is compulsory as it has no go around.
- (iv) Pay one time deposit fee—which can be bypassed as the case may be referred to the Chairman Admissions.
- (v) Pay tuition fee of ` 4000 per month (again something that cannot be bypassed).

Thus conditions (iii) and (v) cannot be bypassed and are compulsory for any candidate else he would be rejected.

- 19. Kamaljeet would not be admitted because he has failed the admission test and hence does not satisfy condition (iii). Option (b) is correct.
- 20. Gourav satisfies conditions 1, 3, 4 and 5. However, since he has a 12 year work experience he would be admitted under sponsor quota. Option (d) is correct.

Solutions for Questions 21 to 23:

- 21. The film Dainandini obeys all the 5 criteria laid down for a film to be selected, i.e. it’s been submitted in time; it’s production cost is less than 5 crore; the director has passed a 3-year course from FTII; the length of the film is less than 150 minutes and the film has been approved by the Censor Board. Thus, the film should be selected. Option (a) is correct.
- 22. In this question, the film Bhadrassalam obeys criteria 1, 2, 4 and 5. However, we do not know

whether the director of the film passed a three year course from the Satyajit Ray Film and Television Institute. We just know that he was a student of that institute. Hence, we do not have enough data to make a decision about the film. Option (b) is correct.

23. The film Ek Bar Achanak is to be rejected because it was submitted after the deadline of 31st October 2007. Thus, option (d) is correct.

Solutions for Questions 24 to 27:

From the analysis of the input-output of the given string it is evident that what the machine is doing is essentially placing the numbers in such an order that the sum of digits of the numbers is placed from minimum to maximum. Also, it does so by first placing the number with the least sum of digits in the first place by switching it's position with the first number in the string. The focus then shifts to put the number with the second least sum of digits in the second place and so on.

Based on an understanding of this logic we can solve the questions that follow based on the same logic.

24. 655,436,764,799,977,572,333 has sum of digits as 16,13,17,25,23,14,9.

In the first step the string would become:

655,436,764,799,977,572,333

Step 1: 333,436,764,799,977,572,655

Step 2: 333,436,572,799,977,764,655

Step 3: 333,436,572,655,977,764,799

which is the required string of numbers. Thus, the required step number is the third step.

25. 544,653,325,688,461,231,857 can be seen as:

13,14,10,22,11,6,20

First step: 6,14,10,22,11,13,20

Second step: 6,10,14,22,11,13,20

Third step: 6,10,11,22,14,13,20

Fourth step: 6,10,11,13,14,22,20

Fifth step: 6,10,11,13,14,20,22.

26. The logic of this situation is such that the third step for an input as mentioned can be possible due to any of many possible inputs. Hence, answering this question definitively is not possible. Note that the question has asked, "What will be the first step of the input?" as against "what could be the first step of the input?" in which case it could have been one of the options which could have been checked to give us a third step as defined in the question.

27. 653,963,754,345,364,861,541 can be seen as 14,18,16,12,13,15,10 if we look at the sum of digits of the numbers. Then we have:

INPUT: 14,18,16,12,13,15,10

First Step: 10, 14,18,16,12,13,15

Second step: 10,12, 14,18,16,13,15

Third Step: 10,12,13, 14,18,16,15 which means 541,345,364,653,963,754,861.

Option (b) is the correct answer.

Solutions for Questions 28 to 30:

A close inspection of what the word arrangement machine is doing tells us that since “She was interested in doing art film” gets converted to “art was in film doing she interested” it is essentially arranging the words on the basis of the ‘reverse alphabetical order arrangement’ of the last alphabets in each word of the word string. If you look at the final output “art was in film doing she interested” the last alphabets of the words follow the order: t-s-n-m-g-e-d and is the reverse alphabetical order of the last letters in each of the seven words. Also notice that the standard move of the machine is to just get the appropriate word in its place in the string by just displacing the incorrect word which stands in it’s place. This is contrary to the previous question where the standard move of the machine was to interchange the wrong word with the right word’s position. Based on this understanding of the logic of the word series we can then move towards solving questions 28 to 30.

28. In the word string “he is going out to search air” the last alphabets are:
e-s-g-t-o-h-r. Their reverse alphabetical order would be: t-s-r-o-h-g-e which means that the output string would be “out is air to search going he”. Option (b) is the correct answer.
29. Step 2 is “t-s-e-o-g-l-n” and we are asked to trace the step number for “t-s-o-n-l-e-g”.
Step 2: t-s-e-o-g-l-n;
Step 3: t-s-o-e-g-l-n;
Step 4: t-s-o-n-e-g-l;
Step 5: t-s-o-n-l-e-g which means “not is casino action legal the considering”.
Thus the machine would reach the given situation in step 5 and hence option (d) is the correct answer.
30. “Father needs to check on the boy” can be looked at as
Input: r-s-o-k-n-e-y (by looking at the last alphabet of each word in the given string). Now the objective of the machine is to put these letters in the reverse alphabetical order which means that the final output has to be: y-s-r-o-n-k-e.

Then we have:

Input: r-s-o-k-n-e-y
Step 1: y-r-s-o-k-n-e
Step 2: y-s-r-o-k-n-e
Step 3: y-s-r-o-n-k-e.

Thus it can be seen easily that the machine would take exactly 3 steps to reach the output required.
Hence, option (d) is correct.

31. Since the question is asking us to find out the thinnest person we can keep our processing focused on doing so; hence we concentrate on the fatter/thinner clues ignoring the taller/shorter clues.

In terms of fatness/thinness, the following structures exist:

D>E (from the first sentence in the question)

Also, B>A>D (from the second sentence in the question)

Combining the two we get:

$B > A > D > E$

The third sentence tells us that Eswar is thinner than Charu, who is thinner than Debu. This means $D > C > E$.

Combining these we get:

$B > A > D > C > E$

Hence, Eswar is the thinnest.

32. The key to this question is in understanding that both the clues are exactly the same. And both the people are essentially pointing out to their maternal uncle's photograph as can be seen from the following which can be seen from Sourav's perspective about the statement he is making:

Generation 1	REACTION 1: My sister's maternal grandmother = my maternal grandmother	
Generation 2	REACTION 2: Only daughter of my sister's maternal grandmother = only daughter of my maternal grandmother = my mother	REACTION 3: PERSON IN PHOTO = Only brother of my sister's maternal grandmother = Only brother of my mother = Maternal Uncle.
Generation 3	Me	My sister

Also, since one of the photographs belongs to Sourav or Yuvraj and it is known that Yuvraj is not pointing to Sourav's photo, it means that Sourav must be pointing to Yuvraj's photo. Hence, Yuvraj would be Sourav's maternal unclce. Option (b) is correct.

1. Mr. Bedi's family members went on a picnic. There were two grandfathers and four fathers and two grandmothers and four mothers in the group. There was at least one grandson or a granddaughter present in this group. There were two husband-wife pairs in this group. The single grandfather (whose wife was not present) had two grandsons and a son present in the party. The single grandmother (whose husband was not present) had two granddaughters present. A grandfather or a grandmother present with their spouses did not have any grandson or granddaughter present.

What was the minimum number of people present in this picnic group?

- (a) 14 (b) 10
(c) 12 (d) 16

Directions for Questions 2 to 4:

- I. Five girls—Seema, Reema, Neeta, Mona and Veena have total five tickets at movie theatres—Priya, Chanakya, M2K, PVR Saket, Satyam where movies—Gangster, Khiladi, Hero Saalaam Namaste and Iqbal are currently playing. Each girl has one movie ticket of one of the five theatres.
- II. The movie Gangster is running in Priya theatre whose ticket is not with Veena and Seema.
- III. Mona had ticket of Iqbal movie.
- IV. Neeta had ticket for the M2K theatre. Veena has the ticket of Satyam theatre where Khiladi is not running.
- V. In PVR Saket theatre Saalaam Namaste is running.
2. Which is the correct combination of the Theatre -Girl-Movie?
- (a) M2K-Neeta-Hero
(b) Priya-Mona-Gangster
(c) Satyam-Veena-Iqbal

(d) PVR Saket-Seema-Saalaam Namaste

3. Which movie is running at Chanakya?
(a) Gangster (b) Iqbal
(c) Hero (d) Data inadequate
4. Who has the ticket for the movie Hero?
(a) Reema (b) Veena
(c) Seema (d) Mona

ore

5. If Daljeet # Chiranjeet \$ Baljeet, which of the following statements is true?
 - (a) Daljeet is the brother of Baljeet
 - (b) Daljeet is the father-in-law of Baljeet
 - (c) Daljeet is the father of Baljeet
 - (d) Daljeet is the brother-in-law of Baljeet
6. If Manjeet * Chiranjeet @ Daljeet @ Baljeet, which of the following is not true?
 - (a) Manjeet is the mother of Baljeet
 - (b) Chiranjeet is the grandfather of Baljeet
 - (c) Manjeet and Daljeet are siblings
 - (d) Manjeet is the aunt of Baljeet
7. If Abhijeet # Chiranjeet * Baljeet, which of the following is not true?
 - (a) Baljeet is the parent of Abhijeet
 - (b) Abhijeet and Chiranjeet are siblings
 - (c) Abhijeet is the son of Baljeet
 - (d) Baljeet is the mother-in-law of Chiranjeet

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8.

- (a) All universities appoint experienced teachers.
- (b) Kashi Vidyapeeth appoints experienced teachers.
- (c) Kashi Vidyapeeth is a university.
- (d) Some universities employ experienced teachers.
- (e) Kashi Vidyapeeth only appoints experienced teachers.

(a) ABC	(b) CDB
(c) ACB	(d) ACE

9.

- (a) Migration of people augments housing problem in urban areas.
- (b) Increase in housing problem in urban areas is detrimental to economic growth.
- (c) Migration of people is detrimental to economic growth.
- (d) Some migration does not cause increase in urban housing problem.
- (e) Some migration is not detrimental to economic growth.

(a) CBA	(b) BDE
(c) CDE	(d) BAC

10.

- (a) Some drivers are drug addicts.
- (b) All drug addict drivers should be terminated.
- (c) Driver Balbeer should be terminated.
- (d) Driver Balbeer is a drug addict.
- (e) Some drivers should be terminated.

(a) BAE	(b) BDE
(c) CDE	(d) BAC

11.

- (a) No officer is a teacher.
- (b) Mr. Rangachary is not a teacher.
- (c) Mr. Rangachary is an officer.
- (d) Dr. Nandi is not an officer.
- (e) Dr. Nandi is a teacher.

(a) ABE	(b) ABC
(c) ADE	(d) ACB

Directions for Questions 12 and 13: Answer the questions based on the following information.

In an institute there are five identical rooms having different items in it. Every identical looking room has a name indicating its contents. The details of the contents and the name of each room are as given below.

Contents	Name of Rooms
Two printers	Pashupatti
Two Computers	Chandrachud
Two Bags	Bagbahadur
One printer and one computer	Purnachandra
One bag and one computer	Biswachakrak

One day somebody in the institute changed the name plate of every room such that no room contains the name correctly explaining its contents.

12. If supervisor of the institute opened a room named Biswachakra and found that one item was a bag. Which of the following would ***definitely be correct*** ?
 - (a) the other item will be a bag
 - (b) the other item will not be a bag
 - (c) the other room named Bagbahadur will contain a bag
 - (d) the other item is a computer
13. If it is known that room named Purnachandra does not contain either any printer or any computer, the room named Pashupatti does not contain any printer and room named Chandrachud contains one computer and one bag, which of the following will ***definitely be true*** if only one of the remaining rooms is opened?
 - (a) It will have at least one computer and printer.
 - (b) It will have two printers.
 - (c) It will have at least one computer.
 - (d) It will have at least one printer.

Directions for Questions 14 to 17: Answer the questions based on the following information.

Four persons (1) Mohit, (2) Monohar, (3) Prasant and (4) Dinesh each had some initial money with them. They all were playing bridge in a way that the loser doubles the money of each of the other three persons from his share. They played four rounds and each person lost one round in the order 1, 2, 3 and 4 as mentioned above. At the end of the fourth round each person had ` 32000/-.

14. What was the amount with Mohit to start with?
 - (a) ` 60000
 - (b) ` 34000
 - (c) ` 66000
 - (d) ` 28000
15. What was the amount with Monohar at the end of the first round?

(a) ` 68000

(b) ` 72000

(c) ` 64000

(d) ` 80000

16. Who has the lowest amount at any round of play throughout the tournament?

(a) Mohit

(b) Monohar

(c) Prasant

(d) Dinesh

17. What was the amount with Prasant at the end of the second round?

(a) 36000

(b) 72000

(c) 16000

(d) 68000

18. The VC (Vice-Chancellor) of a university has to select four professors, out of eight professors for a committee. The VC decided to select these four professors in such a manner that each selected professor has a habit common with at least one of the other three professors selected. The selected professors must also share at least one of the non-common habits of any of the other three professors selected.

Professor Arora likes surfing and smoking but hates gambling.

Professor Bhalla likes smoking and drinking but hates surfing.

Professor Chadha likes gambling but hates smoking.

Professor Dhyani likes movies but hates drinking.

Professor Eswar likes drinking but hates smoking and movie.

Professor Fazil likes surfing but hates smoking and movie.

Professor Goyal likes gambling and movies, but hates surfing.

Professor Hooda likes smoking and gambling but hates movies.

Who are the four professors selected by the VC for the committee?

(a) Prof. Chadha, Prof. Dhyani, Prof. Eswar, Prof. Goyal

(b) Prof. Arora, Prof. Bhalla, Prof. Eswar, Prof. Fazil

(c) Prof. Bhalla, Prof. Chadha, Prof. Goyal, Prof. Hooda

(d) Prof. Dhyani, Prof. Eswar, Prof. Fazil, Prof. Hooda

Directions for Questions 19 to 22: While selecting candidates for positions of engineers, a software firm followed criteria as given below. A candidate must

- i. be an engineering graduate with at least 60% marks at degree and 80% marks at higher secondary level;
- ii. have at least one year's experience of working;
- iii. be ready to sign a bond of three years;
- iv. must not be more than 28 years of age on 1.2.2007;

However, if a candidate fulfils all the criteria except—

- (a) at (i) above but has obtained 50% marks at degree and 70% at higher secondary respectively and has at least three years experience of working, the case may be referred to the Director of the firm.
- (b) at (iii) above, but is willing to pay an amount of 1 lakh if required to leave, the case may be referred to the President of the firm.
- (c) at (ii) above but is a computer engineer, the case may be referred to the DGM.

Based on the above criteria and the information given in each of the following cases, you have to take the decision on employing a candidate. You are not to assume anything and in the absence of adequate information, choose option b (not to be selected). The case is given to you as on 1.2.2007. The options available for you are provided in a, b, c and d.

19. Amar is a mechanical engineer with 65% marks at degree and 88% marks at HSC. He completed his engineering degree in 2003 at the age of 22 years and immediately started working in an engineering firm. He is keenly interested in going to USA and is not ready to sign a bond. However, he does not mind paying an amount of ` 1 lakh.
 - (a) The case is to be selected
 - (b) The case is not to be selected
 - (c) The case is to be referred to Director
 - (d) The case is to be referred to President
20. Rajkishore, a computer engineer, has just completed graduation in July 2006, at the age of 23 years obtaining 72% marks. He had obtained 92% marks in HSC. He is willing to sign a bond with the company. He had joined a software company and has been working as trainee in August 2006 and is working there till date.
 - (a) The case is to be selected
 - (b) The case is not to be selected
 - (c) The case is to be referred to the Director
 - (d) The case is to be referred to the President
21. Madhuri is an electrical engineer and working as an assistant engineer for the past two years. She had secured 85% and 69% marks at HSC and degree respectively. She has just completed 25 years of age.
 - (a) The case is to be selected
 - (b) The case is not to be selected
 - (c) The case is to be referred to the Director
 - (d) The case is to be referred to the President
22. Kamla is an engineering graduate with 66% marks at degree and 90% at HSC. She joined an engineering firm 2 years ago at the age of 24 years. She is ready to sign the bond.
 - (a) The case is to be selected
 - (b) The case is not to be selected
 - (c) The case is to be referred to Director
 - (d) The case is to be referred to President

Directions for Questions 23 to 25: Answer the questions on the basis of the information given below.

There was an effort to study the relative importance that beneficiaries of five states assigned to five different development programmes implemented by their governments. The programmes were Jawahar Rozgar Yojana (JRY), Indira Awas Yozna (IAY), Mid-Day Meal (MDM), Rural Health Mission (RHM), National Rural Employment Guarantee Scheme (NREG). The level of dissimilarity between two states is the maximum difference in the rank allotted by the two states to any five programmes. The following table indicates the rank order of the five programmes for each state.

Rank	Orissa	Bihar	Rajasthan	Kerala	Karnataka
1	JRY	MDM	IAY	NREG	NREG
2	RHM	JRY	MDM	IAY	JRY
3	MDM	RHM	JRY	RHM	MDM
4	NREG	IAY	NREG	JRY	RHM
5	IAY	NREG	RHM	MDM	IAY

23. Which of the following states is least dissimilar to Orissa?
(a) Bihar (b) Rajasthan
(c) Kerala (d) Karnataka
24. Which of the following states is most dissimilar to Orissa?
(a) Bihar (b) Rajasthan
(c) Kerala (d) Karnataka
25. Three of the following four pairs of states have identical levels of dissimilarity. Which is the odd one out?
(a) Kerala & Bihar
(b) Bihar & Karnataka
(c) Rajasthan & Kerala
(d) Karnataka & Rajasthan

Answer Key

1. (c) 2. (d) 3. (b) 4. (b)
5. (d) 6. (a) 7. (d) 8. (c)
9. (d) 10. (a) 11. (d) 12. (a)
13. (d) 14. (c) 15. (a) 16. (a)

17. (b)	18. (b)	19. (b)	20. (d)
21. (b)	22. (a)	23. (a)	24. (b)
25. (c)			

Solutions:

- The distribution of males and females that would give us the minimum number of people in the family would be as follows.

Note: In the table M# represents a Male and F# represents a female.

					Explanation
Generation 1	M1 (single grandfather whose wife is not present)	M2-F1 (Couple)	F2 (Single grandmother whose husband is not present)		We have 2 grandfathers and 2 grandmothers out of which we are constrained to have at least 1 single grandfather and 1 single grandmother
+Generation 2	M3-F3 (Couple)		F4	M4	There are a total of 4 fathers and 4 mothers, which means that after the two grandfathers and 2 grandmothers there must be another two fathers and two mothers. Thus we have to introduce M3,M4 and F3 and F4.
Generation 3	M5,M6		F5,F6		The single grandmother has two granddaughters and the single grandfather has two grandsons; thus we need to introduce F5, F6 and M5, M6 respectively. Also note that the son of the single grandfather is M3 and the daughter of the single grandmother is F4

From the logic of the above table, we see that we can do the required conditional match by using 6 men and 6 women. Thus, a minimum number of 12 people can be present in the gathering. Option (c) is the correct answer.

Solutions for Questions 2 to 4:

The starting gird for this question set would involve three variables, viz: Girl name, Theatre and Movie.

Name	Movie	Theatre
Seema		
Reema		
Neeta		
Mona		
Veena		

We also know that the movie theatres are: P, C, M, PVR and S. Always make sure you use abbreviations for the names in solving reasoning questions, although in this question moving forward we would be showing the full names for your understanding.

Further, the movies are G, K, H, S and I.

Once we get to this point, we first look for direct clues that can directly fit into our solution grid. In this context, the easiest and most convenient clue to use are clues (iii) and (iv) which on using would change our grid to:

Name	Movie	Theatre
Seema		
Reema		
Neeta		M2K
Mona	Iqbal	
Veena	Not Khiladi means either Gangster/Hero /Salaam Namaste	Satyam

At this point in our solution grid, clue (ii) becomes usable. “Movie Gangster is running in Priya theatre whose ticket is not with Veena or Seema.” This should be interpreted in the fashion that Gangster and Priya is a movie-theatre combination which has to be kept together and since it is not with Seema, looking at the grid the only place it can be fit inside the solution grid is in front of Reema. Thus, the solution grid changes to:

Name	Movie	Theatre
Seema		
Reema	Gangster	Priya
Neeta		M2K
Mona	Iqbal	
Veena	Hero /Salaam Namaste	Satyam

We can now directly use clue (v) and the grid would then fill out the details for Seema, and also since Salaam Namaste goes to Seema, Veena must be watching Hero. The grid would now become:

Name	Movie	Theatre
Seema	Salaam Namaste	PVR Saket
Reema	Gangster	Priya
Neeta		M2K
Mona	Iqbal	
Veena	Hero	Satyam

The missing values in the above grid can be filled up looking at what has not been used and the final answers can be read off the following table:

Name	Movie	Theatre

Seema	Salaam Namaste	PVR Saket
Reema	Gangster	Priya
Neeta	Khiladi	M2K
Mona	Iqbal	Chanakya
Veena	Hero	Satyam

2. Option (d) is correct.
3. Option (b) is correct.
4. Veena has the ticket to the Hero movie. Option (b) is correct.

Solutions for Questions 5 to 7:

5. Daljeet # Chiranjeet \$ Baljeet means Daljeet is the brother of Chiranjeet who is the wife of Baljeet. Obviously this means that Daljeet is the brother-in-law of Baljeet. Option (d) is correct.
6. Manjeet * Chiranjeet @ Daljeet @ Baljeet shows us three relations. These are:
Daljeet is the father of Baljeet. Chiranjeet is the father of Daljeet and Manjeet is the daughter of Chiranjeet. From these relationships we can confirm that the relations specified in options (b), (c) and (d) are true. Manjeet is the mother of Baljeet is the false statement as we can see that Manjeet being the daughter of Chiranjeet would be the sister of Daljeet. Hence, she is the aunt of Baljeet and not the mother. Option (a) is correct as we have to mark what is not true.
7. Abhijeet # Chiranjeet * Baljeet means that Chiranjeet is Baljeet's daughter and Abhijeet being Chiranjeet's brother it also means that Abhijeet and Chiranjeet are the son and daughter of Baljeet.
Option (d) is not true and since that is what we are looking for, we can conclude that option (d) is the correct answer.

Solutions for Questions 8 to 11:

8. The statement string read in the order A-C-B is logical as, if all universities appoint experienced teachers and Kashi Vidyapeeth is a university it follows that Kashi Vidyapeeth appoints good teachers.
Thus, option (c) is correct.
Note that A-C-E is incorrect because the conclusion Kashi Vidyapeeth 'only' appoints experienced teachers is ambiguous in the context of the given pre-conditions stated in A-C.
9. The structure of the argument in B-A-C can be looked at as follows:
B: X causes Y; A: Z causes X; Hence, the conclusion in C: Z causes Y, is correct.
Note here in the context of the statements in the question:
X-Increase in housing problem;
Y- Detriment to economic growth;
Z- Migration of people
Hence, B-A-C is the valid logical structure in this case and hence option (d) is correct.

10. B-A-E is a valid logical argument. The conclusion should be “to terminate all those drivers who are drug addicts meaning that fraction of drivers who are drug addicts should be terminated. Option (a) is correct.
11. A-C-B is a valid argument as, if Mr. Rangachary is an officer he would naturally not be a teacher, given that no officer is a teacher.
Option (d) is correct.

Solutions for Questions 12 and 13:

The main thing you need to understand here is that once the name plates are interchanged, none of the room names would have the original items as given in the table of the question.

12. The room Biswachakrak would not have it's original contents, viz.: one bag and one computer. Thus, if the supervisor opens the room and finds a bag, the room must necessarily contain two bags (as there are only 2 possible combinations of items that include a bag). Thus, the other item must be a bag. Option (a) is correct.
13. If Purnachandra does not contain any printer or computer, it can only mean that Purnachandra contains 2 bags. Further, since Chandrachud contains one computer and one bag AND Pashupatti does not contain any printers, it must necessarily follow that Pashupatti contains two computers. In this case, the table of room names and contents would look like:

Pashupatti	Two computers
Purnachandra	Two bags
Chandrachud	One bag and one computer
Bagbahadur	These rooms would have any of: 2 printers OR One printer and One Computer
Biswachakrak	

If someone opens a room other than Pashupatti, Purnachandra and Chandrachud, it necessarily means that they would have opened either Bagbahadur or Biswachakrak. In either case, the room opened would have at least one printer. Option (d) is correct.

Solutions for Questions 14 to 17:

These kind of questions are best solved in the reverse order by progressively doubling the money of the individuals depending on who lost the game. The following table is self explanatory:

AFTER ROUND	Mohit	Monohar	Prasant	Dinesh	Loser in Round
4	32000	32000	32000	32000	Dinesh
3	16000	16000	16000	80000	Prasant
2	8000	8000	72000	40000	Monohor
1	4000	68000	36000	20000	Mohit
Starting values	66000	34000	18000	10000	

The solutions can then be read off the table:

14. Mohit had ` 66000 to start with. Option (c) is correct.
15. Monohar had ` 68000 at the end of the first round. Option (a) is correct.
16. Mohit had ` 4000 at the end of the first round and that is the lowest value throughout the tournament. Option (a) is correct.
17. Prasant had ` 72000 at the end of the second round. Option (b) is correct.

Solutions for Questions 18:

The only combination amongst those given in the options that satisfies the given condition is the combination of Prof. Arora, Prof. Bhalla, Prof. Eswar and Prof. Fazil. In this combination of professors, each professor has a habit which is common with at least 1 of the other three professors selected. Also, the selected professors can be seen to share at least one non-common habit of any of the other three professors selected. Option (b) is correct.

Solutions for Questions 19 to 22:

The main criteria which need to be satisfied in this question is/are:

- (i) engineering graduate with minimum 60% marks at degree and 80% marks at higher secondary; Has a bypass of referral to Director subject to the marks being 50% and 70% respectively and having a minimum 3 year experience.
- (ii) Minimum 1 year experience; Has a bypass of referral to President if the candidate is willing to pay an amount of Rs.1 lakh if he is required to leave. This also has another bypass, i.e. of referral to the DGM if the candidate is a computer engineer.
- (iii) Readiness to sign a 3 year bond; Has no bypass.
- (iv) Must be 28 or below in terms of age on 1st February 2007. Has no bypass.

Based on this understanding of the flow chart of selection/ rejection/ referral we can now move on to the individual questions in the set.

19. Amar should not be selected as he is not ready to sign a bond which is a compulsory clause. Option (b) is correct.
20. The candidate Rajkishore meets criteria i, iii and iv. However, since he does not have a minimum of 1 year work experience he does not meet condition ii. In such a case he can be referred to the DGM as he is a computer engineer. Option (d) is correct.
21. The question clearly states that in case some information is not available the candidate is not to be selected. In Madhuri's case we do not have information about her willingness to sign a bond and hence we should not select her. Option (b) is correct.
22. Kamla should be selected as she meets each of the 4 criteria as per the original requirements of each criterion. Thus, option (a) is correct.

Solutions for Questions 23 to 25:

In order to solve this question, you need to be clear about what the level of dissimilarity means. As stated in the question set, the level of dissimilarity is the 'maximum difference of ranks' allotted by the two states to any of the five attributes.

Thus, for instance, if we look at the level of dissimilarity between Orissa and Rajasthan the rank

given to IAY by Orissa is 5th and by Rajasthan is 1st. Hence, their level of dissimilarity is 4, as no other pair can have a level of dissimilarity higher than 4.

23. The level of dissimilarity between Orissa and Bihar is 2 as the maximum difference in ranks allotted is for MDM (2). Orissa and Rajasthan have a dissimilarity of 4, while Kerala and Karnataka have a dissimilarity of 3 with Orissa. Thus, Bihar is least dissimilar to Orissa and option (a) is correct.
24. As already seen in the question above, Rajasthan has a dissimilarity of 4 with respect to Orissa and hence is the most dissimilar to Orissa. Option (b) is correct.
25. Kerala and Bihar; Bihar and Karnataka AND Karnataka and Rajasthan have a dissimilarity of 4 each. Only the pair of Rajasthan and Kerala have a dissimilarity of 3 and hence this pair is the odd pair out of the four pairs. Option (c) is correct.

Section 4

Past Years' Solved Questions from the SNAP

 SNAP 2011

 SNAP 2010

 SNAP 2009

 SNAP 2008

 SNAP 2007

 SNAP 2006

INTRODUCTION TO REASONING IN THE SNAP EXAM

Unlike the other three exams covered under this section (namely CAT, XAT & IIFT), the SNAP examination is normally associated with an easier level of questions—and consequently a higher score in terms of achieving the overall cut off of the paper.

The experience of reasoning in the SNAP over the past few years also confirms to the overall paper difficulty levels. Thus, the reasoning questions in the SNAP have largely been in the easy variety—and quite rarely reaching the level of moderate difficulty and very rarely reaching difficult levels (& when they do reach the difficult levels any sane strategist would tell you that you should skip the odd difficult reasoning question in the SNAP—as there would be a lot of other ‘doable’ questions which you should attempt first in the test.)

The question variety encompassed in the SNAP over the past few years shows us the use of the following question types:

Selection criteria

Syllogisms

Logical Deductions

Binary Logic

Cubes and Dice

Direction test

Quantitative Reasoning

Flowcharts-based Reasoning

Ranking

Venn Diagrams

**Critical Reasoning pertaining to argument analysis—
strengthening/ weakening arguments, Conclusions, Assumptions**

Analogies

Sequences and Series

Puzzles

Seating Arrangements

Visual Reasoning

Coding decoding

**Team Selection (formation)
puzzles**

Family Trees

Mathematical Symbols

Input-Output

An analysis of the question break up shows that the SNAP exam has tested candidates on a wide variety of reasoning skills, quite like the IIFT examination—though at a lower level of difficulty.

Hence, it would be appropriate to point out that preparing for Reasoning should be one of the major thrust areas for any student seriously planning an assault on the SNAP exam.

Directions for Questions 1 and 2: Each question consists of a set of numbered statements. Assume that each one of these statements is individually true. Each of the four choices consists of a subset of these statements. Choose the subset as your answer where the statements therein are logically consistent among themselves:

1.
 - A. Only if the water level in the coastal areas rises, then the people change their lifestyle.
 - B. People change their lifestyle only if they are rewarded.
 - C. If people are rewarded, then they will not change their lifestyle.
 - D. If the temperature rises, then the water level in the coastal areas rises.
 - E. Whenever the water level in the coastal area rises, then the temperature rises.
 - F. Unless the people change their lifestyle, temperature rises.
 - G. People are rewarded.
 - H. Water level in the coastal areas does not rise.
 - (a) C, D, F, G and H
 - (b) G, F, D, B and H
 - (c) E, F, G, H and B
 - (d) None of the above
2.
 - A. If Kumar sings, then the audiences sleep.
 - B. If Kumar sings, then the audiences dance.
 - C. Unless audience do not dance, the concert will be successful.
 - D. Only if the audience dance, the concert will be successful.
 - E. If Vina dances, then Kumar sings.
 - F. Kumar sings only if Vina dances.
 - G. Vina dances
 - H. The concert is successful.

- (a) C, F, G, B and H
- (b) A, C, F, G and H
- (c) E, C, G, B and H
- (d) Both (b) and (c)

Directions for Questions 3 to 5: These questions are based on the data given below.

There are only four members of a family viz., A, B, C and D and there is only one couple among them. When asked about their relationships, following were their replies:

- a. A: B is my son. D is my mother.
 - b. B: C is my wife. D is my father.
 - c. C: D is my mother-in-law. A is my daughter.
 - d. D: A is my grand-daughter. B is my daughter-in-law.
3. Who always speaks the truth?
- (a) A
 - (b) B
 - (c) C
 - (d) D
4. How is B related to C?
- (a) Father
 - (b) Mother
 - (c) Wife
 - (d) Husband
5. Which of the following statements must be true?
- (a) A's grandmother alternates between the truth and lie.
 - (b) C's wife always speaks the truth.
 - (c) A's grandfather always speaks the truth.
 - (d) B's daughter always tells lies.

Directions for Questions 6 to 8: These questions are based on the following information.

A cube of 7 cm × 7 cm × 7 cm is kept in the corner of a room and painted in three different colours, each face in one colour. The cube is cut into 343 smaller but identical cubes.

6. How many smaller cubes do not have any face painted?
- (a) 125
 - (b) 180
 - (c) 144
 - (d) 216
7. How many smaller cubes have exactly one colour on them?
- (a) 108
 - (b) 72
 - (c) 36
 - (d) 24
8. How many smaller cubes have at the most two faces painted?
- (a) 343
 - (b) 342
 - (c) 256
 - (d) 282

Directions for Questions 9 and 10: Amit was driving in New Town, where all roads run either north-south or east-west form a grid. Roads were at a distance of 1 km from each other and parallel to each other.

9. Amit started at the intersection of streets no. 7 and 8. He drove 3 km north, 3 km west and 4 km south. Which further route could bring him back to his starting point?
- I. 3 km east, then 2 km south
 - II. 1 km north, then 3 km east
 - III. 1 km north, then 2 km west
- (a) I only (b) II only
(c) I and II only (d) II and III only
10. After driving as stated in question no. 9 above, Amit did not return to his starting point, but instead drove 4 km east and 1 km north. How far is he from his starting point?
- (a) 5 km (b) 4 km
(c) 1 km (d) 7 km

Directions for Questions 11 to 15: Refer to the following data and answer the questions that follow:
A numerical machine accepts two values X and Y. Then it updates these values as $X = XY$ and $Y = Y + 1$ in every step. The machine stops at $X = N$.

11. For $X = 3$, $Y = 2$ and $N = 100$. How many steps are performed before the machine stops?
- (a) 2 (b) 3
(c) 4 (d) 5
12. In the above question, what is the final value of X?
- (a) 6 (b) 20
(c) 72 (d) 360
13. In the above question, what is the final value of Y?
- (a) 4 (b) 5
(c) 6 (d) 20
14. If the value of N is changed to 500, what would be the final value of X?
- (a) 360 (b) 500
(c) 560 (d) 2160
15. If $X = 2$ and $Y = 3$, what should be the minimum value of N such that final value of Y is 7?
- (a) 300 (b) 360
(c) 720 (d) 860

Directions for Questions 16 to 20: Refer to the following statements and answer the questions:

Seven students Priya, Ankit, Raman, Sunil, Tony, Deepak and Vicky take a series of tests. No two students get similar marks. Vicky always scores more than Priya. Priya always scores more than Ankit. Each time either Raman scores the highest and Tony gets the least, or alternatively Sunil scores the highest and Deepak or Ankit scores the least.

16. If Sunil is ranked sixth and Ankit is ranked fifth, which of the following can be true?
 - (a) Vicky is ranked first or fourth.
 - (b) Raman is ranked second or third.
 - (c) Tony is ranked fourth or fifth.
 - (d) Deepak is ranked third or fourth.
17. If Raman gets the highest, Vicky should be ranked not lower than:
 - (a) Second
 - (b) Third
 - (c) Fourth
 - (d) Fifth
18. If Raman is ranked second and Ankit is ranked first, which of the following must be true?
 - (a) Sunil is ranked third.
 - (b) Tony is ranked third.
 - (c) Priya is ranked sixth.
 - (d) None of these.
19. If Sunil is ranked second, which of the following can be true?
 - (a) Deepak gets more than Vicky.
 - (b) Vicky gets more than Sunil.
 - (c) Priya gets more than Raman.
 - (d) Priya gets more than Vicky.
20. If Vicky is ranked fifth, which of the following must be true?
 - (a) Sunil scores the highest.
 - (b) Raman is ranked second.
 - (c) Tony is ranked third.
 - (d) Ankit is ranked second.
21. In 2002, according to a news poll, 36% of the voters had leaning towards party “Y”. In 2004, this figure rose to 46%. But in another survey the percentage was down to 40%. Therefore, the party “Z” is likely to win the next election. Which of the following, if true, would seriously weaken the above conclusion?
 - (a) People tend to switch their votes at the last minute.
 - (b) It has been showed that 85% of the voters belonging to party “Y” vote in an election as compared to 80% of the voters belonging to party “Z”.
 - (c) 35% of people favour party “Z”.
 - (d) No one can predict how people will vote.
22. Inflation rose by 5% over the second quarter, by 4% during the first quarter and higher than 3% recorded during the same time last year. However, the higher price index did not seem to

alarm National Stock Index as stock prices remain steady.

Which of the following, if true, could explain the reaction of National Stock Index?

- (a) RBI announced that it will take necessary corrective measures.
- (b) Stock prices were steady because of a fear that inflation would continue.
- (c) Economists warned that inflation would continue.
- (d) Much of the quarterly increase in the price level was due to a summer drought effect on food price.

Direction for Question 23: Pick up the appropriate analogy.

23. Birth : Dirge

- (a) Sunset : sunrise
- (b) security check : arrival
- (c) marriage : alimony
- (d) welcome address : vote of thanks

24. Beautiful beaches attract people, no doubt about it. Just look at this city's beautiful beaches, which are among the most overcrowded beaches in the state.

Which of the following exhibits a pattern of reasoning most similar to the one exhibited in the argument above?

- (a) Moose and bear usually appear at the same drinking hole at the same time of day. Therefore, moose and bear must grow thirsty at about the same time.
- (b) Children who are scolded severely tend to misbehave more often than other children. Hence if a child is not scolded severely that child is less likely to misbehave.
- (c) This software programme helps increase the work efficiency of its users. As a result, these users have more free time for other activities.
- (d) During weather my dog suffers from fleas more than during cooler weather. Therefore, fleas must thrive in a warm environment.

25. No national productivity measures are available for underground industries that may exist but remain unreported. On the other hand, at least some industries that are run entirely by self-employed industrialists are included in national productivity measures.

From the information given above, it can be validly concluded that

- (a) there are at least some industries run entirely by self-employed industrialists that are underground industries
- (b) no industries that are run entirely by self-employed industrialists operate underground.
- (c) there are at least some industries other than those run entirely by self-employed industrialists that are underground industries.
- (d) there are at least some industries run entirely by self-employed industrialists that are not underground industries.

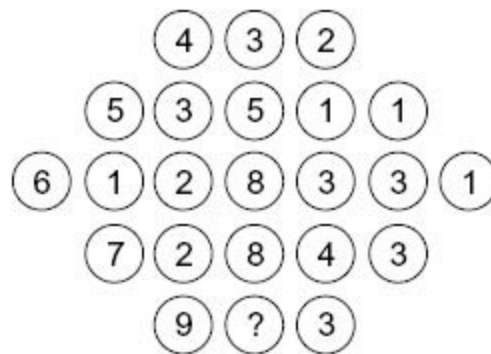
26. Nilu has never received a violation from the Federal Aviation Administration during her 16-year flying career. Nilu must be a great pilot.

Which of the following can be said about the reasoning above?

- (a) The definitions of the terms create ambiguity.
 - (b) The argument uses circular reasoning.
 - (c) The argument is built upon hidden assumptions.
 - (d) The argument works by analogy.
27. Many people argue that the death penalty deters murder. However, the notorious killer Tom Hanks deliberately moved to a state that imposes the death penalty just before embarking on a series of ferocious murders. Thus, it seems clear that the existence of the death penalty does not serve as a deterrent to murder.

The argument above may best be characterised as:

- (a) an appeal to emotion.
 - (b) a flawed analogy.
 - (c) a general conclusion based on a specific example.
 - (d) circular reasoning.
28. What number should replace the question mark?



- (a) 1
 - (b) 4
 - (c) 1
 - (d) 6
29. The fewer restrictions there are on the advertising of legal services, the more lawyers there are who advertise their services, and the lawyers who advertise a specific service usually charge less for that service than lawyers who do not advertise. Therefore if the state removes any of its current restrictions, such as the one against advertisements that do not specify fee arrangements, overall consumer legal costs will be lower than if the state retains its current restrictions.
- If the statements above are true, which of the following must be true?
- (a) Some lawyers who now advertise will charge more for specific services if they do not have to specify fee arrangements in the advertisements.
 - (b) More consumers will use legal services if there are fewer restrictions on the advertising of legal services.
 - (c) If the restrictions against advertisements that do not specify fee arrangements is removed, more lawyers will advertise their services.
 - (d) If more lawyers advertise lower prices for specific services, some lawyers who do not advertise will also charge less than they currently charge for those services.
30. Which of the following, if true, would most seriously weaken the argument concerning overall

consumer legal costs?

- (a) The state is unlikely to remove all of the restrictions that apply solely to the advertising of legal services.
- (b) Lawyers who do not advertise generally provide legal services of the same quality as those provided by lawyers who do advertise.
- (c) Most lawyers who now specify fee arrangements in their advertisements would continue to do so even in the specification were not required.
- (d) Most lawyers who advertise specific services do not lower their fees for those services when they begin to advertise.

Answer Key

1. (d)	2. (c)	3. (d)	4. (c)
5. (d)	6. (d)	7. (a)	8. (b)
9. (b)	10. (c)	11. (c)	12. (d)
13. (c)	14. (d)	15. (a)	16. (d)
17. (b)	18. (d)	19. (a)	20. (a)
21. (c)	22. (d)	23. (c)	24. (d)
25. (d)	26. (c)	27. (c)	28. (d)
29. (c)	30. (d)		

Solutions:

Solutions for Questions 1 and 2:

1. The first thing you should notice in this question, is that out of the given 8 statements in this question, only statements G and H are event based statements. All other statements specify conditions and are in the following formats:
 - (i) If A then B—which means that if A occurs then B occurs;
 - (ii) Whenever A then B (which essentially means the same thing as ‘If A then B’);
 - (iii) A only if B; which means that A can occur only if B occurs but A is not sure to occur if B occurs.
 - (iv) Only if A then B—which means that A causes B and also that A is the only cause that leads to B.
 - (v) If A then Not B—which means that if A happens B would not happen.
 - (vi) Unless A, B—which means that B would happen unless A happens.Once you realize this you can move onto evaluate the options in the question.
For instance option (a) gives us the combination C, D, F, G and H. Since G and H are events we need to evaluate if G leads to H given that C, D and F are true.

C states: If people are rewarded then they will not change their lifestyle.

F states: Unless people change their lifestyle, temperature rises.

D states: If the temperature rises, then the water level in the coastal areas rises.

With these conditions if we know from G that people are rewarded, our thinking in order to check the logical consistency of the statements in this group would go as under:

People are rewarded Æ Hence they would not change their lifestyle (From C) Æ Since, people do not change their lifestyle, the temperature would rise (from F) Æ If the temperature rises, the water level in the coastal areas rises (From D).

But the cause effect relationship given between G and H is:

People are rewarded Æ Water level in the coastal areas does not rise.

This cause-effect relationship is opposite to what would happen if we consider the logic chain of C-F-D as shown above. Thus, the statements in option (a) are inconsistent among themselves.

You will need to think of the logical consistency of the statements in options (b) and (c) similarly.

The following checking structure would work for option (b).

The statements in option (b) are: G, F, D, B and H. Amongst these, G and H are again the cause and effect statements as they are the only events amongst the statements given.

Hence, the cause-effect relationship we need to test is:

People are rewarded (leading to) Æ Water level in the coastal areas does not rise; under the conditions specified by the statements B, D, F.

B states: People change their lifestyle only if they are rewarded.

Note here that this means that in case people are rewarded, they may change their lifestyle but it is not sure whether they would change their lifestyle if they are rewarded. What is sure is that if they are not rewarded they would not change their lifestyle. It is similar to the statement we often hear: “You would succeed only if you work hard” does not mean that if you worked hard you would necessarily succeed. You may or may not succeed in case you work hard, but what is sure is that if you do not work hard, you would not succeed.

F states: Unless people change their lifestyle, temperature rises.

D states: If the temperature rises, then the water level in the coastal areas rises.

The logic string in this case would go like this:

People are rewarded Æ People change their lifestyle (might or might not happen—as we do not know for certain that people would change their lifestyle if they are rewarded.) We cannot conclude anything about whether the temperature rises or does not as we do not know whether people changed their lifestyle, since we do not know about the temperature’s movement we can conclude nothing about the rise in water level in coastal areas.

Thus, the conclusion given in H is uncertain in this case, and it is not something we can definitely conclude. Thus, this option is also rejected.

The following checking structure would work for option (c).

The statements in option (c) are: E, F, G, H and B. Amongst these, G and H are again the

cause and effect statements as they are the only events amongst the statements given.

Hence, the cause-effect relationship we need to test is:

People are rewarded (leading to) $\nrightarrow$ Water level in the coastal areas does not rise, under the conditions specified by the statements E, F, B.

B states: People change their lifestyle only if they are rewarded.

Note here that this means that in case people are rewarded, they may change their lifestyle but it is not sure whether they would change their lifestyle if they are rewarded. What is sure is that if they are not rewarded they would not change their lifestyle (as explained above).

F states: Unless people change their lifestyle, temperature rises.

E states: Whenever the water level in the coastal areas rises, the temperature rises.

The logic string in this case would go like this:

People are rewarded $\nrightarrow$ Statement B—People change their lifestyle (might or might not happen—as we do not know for certain that people would change their lifestyle if they are rewarded.) $\nrightarrow$ Statement F—We cannot conclude anything about whether the temperature rises or does not as we do not know whether people changed their lifestyle.

$\nrightarrow$ Statement E is totally irrelevant in this case and does not fit into the logic string.

Thus, the conclusion given in H is uncertain in this case, and it is not something we can definitely conclude. Thus, this option is also rejected.

Hence, option (d) is the correct answer.

2. Like the previous question, the first thing you should notice in this question, is that out of the given 8 statements in this question, only statements G and H are event based statements. The other statements specify conditions and are in the following formats:

(i) If A then B- which means that if A occurs then B occurs;

(iv) Only if A then B—which means that A causes B and also that A is the only cause that leads to B.

(vi) Unless not A, B—which means that B would happen unless A does not happen.

From this point we can move into the options and check the logical consistency of the statements in each option in much the same way as we did it in the previous question.

Checking option (a): The statements which are part of this option: C, F, G, B and H. Again since G and H are the only events in this list we will essentially test the cause-effect relationship:

Vina Dances $\rightarrow$ (results in) the concert is successful.

And we need to see if this turns out to be a logical conclusion under the conditions specified by B, C and F.

B states: If Kumar sings, then the audiences dance.

C states: Unless the audience do not dance, the concert will be successful.

F states: Kumar sings only if Vina dances.

Now the logic string that can be built based on these conditions is:

Vina Dances $\rightarrow$ Statement F—Whether Kumar sings is uncertain (check the logic of the

statement: You will succeed only if you work hard.) $\wedge$ Statement B—Thus, whether audience would dance is uncertain because they dance if Kumar sings $\wedge$ Statement C—The concert being successful is not something we can definitely say.

Thus, this option is rejected.

We would check options (b) and (c) similarly.

Checking option (b), the events described in this option give us the logic:

Vina dances $\wedge$ (leads to) The concert is successful and we need to test whether statements A, C, F justify this conclusion.

A states: If Kumar sings, then the audience sleep.

C states: Unless the audience do not dance, the concert will be successful.

F states: Kumar sings only if Vina dances.

Now the logic string that can be built based on these conditions is:

Vina Dances $\wedge$ Statement F—Whether Kumar sings is uncertain (check the logic of the statement: You will succeed only if you work hard) $\wedge$ Statement A—Thus, whether audience would sleep or dance or do not dance is uncertain because they sleep if Kumar sings $\wedge$ Statement C—The concert being successful is not something we can definitely say.

Thus, this option is rejected.

Checking option (c), the events described in this option give us the logic:

Vina dances $\wedge$ (leads to) The concert is successful and we need to test whether statements B, C, E justify this conclusion.

B states: If Kumar sings, then the audience dance.

C states: Unless the audience do not dance, the concert will be successful.

E states: If Vina dances, Kumar sings.

Now the logic string that can be built based on these conditions is:

Vina Dances $\wedge$ Statement E—Kumar sings is certain $\wedge$ Statement B—If Kumar sings, then the audiences dance, so the audience would dance, since Kumar is singing $\wedge$ Since the audience is dancing, the concert would be successful.

Thus, this option is correct.

Option (c) is the correct answer.

Solutions for Questions 3 to 5:

The mapping of the 4 statements can be shown as follows:

A's Statement:

D (mother of A, so female)

A

B (son of A, so male)

B's Statement:

D (father of B, so male)

B (male)
C (wife of B, so C is female)

C's Statement:

D (mother-in-law of C, so female)
B-C is a couple but their sex is unknown
A (daughter of C, so female)

D's statement

D (sex unknown)
B (daughter-in-law of D, so female)
C (B's husband and D's son)
A (grand-daughter of D, so female)

In order to find out who is always speaking the truth you need to think of a couple of things. The first one is that, the relationship between B and C has to be clearly established, otherwise the answer to the second question in this set would become ‘cannot be determined’—an option that does not exist in this question.

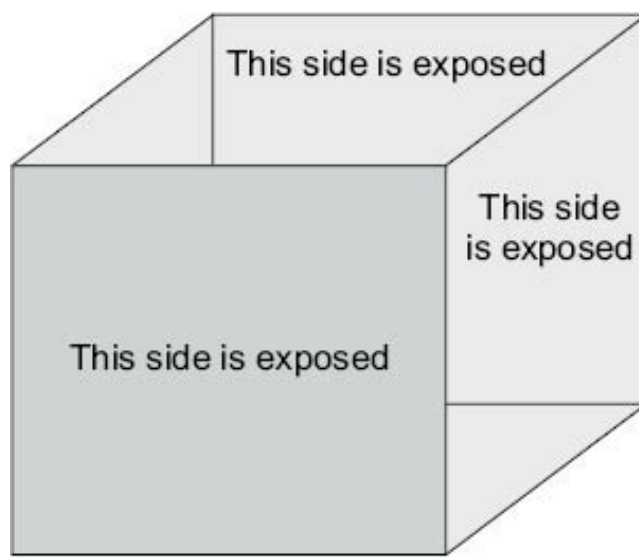
If you were to use the relationship grids drawn above, it is clear that only B's or D's statements could both be true as they are the only ones defining a clear relationship between B and C. By a similar logic we need information about the relationships of each of the 4 people, from the statements of the person who speaks both statements true in order to test the truth of the options in the third question in the set. If we look at the statements of B, it is clear that although we do get a relationship between B, C and D in this case, we are not able to place A. Thus, we cannot assume both statements of B to be true.

This can only mean that both the statements of D must be true, as D's statements clearly identify the relationships between A, B, C and D.

- 3. D always speaks the truth. Option (d) is correct.
- 4. B is the wife of C. Option (c) is correct.
- 5. Once we realise that D is always true, we also realise that both of A's statements must be false. Also, if D's statements are true, A is B's daughter. Option (d) is hence the correct answer.

Solutions for Questions 6 to 8:

The basic figure for this situation would look as shown below with the two lateral sides and the front face exposed for painting, while the other three surfaces would be covered by the wall or the ground, and hence would not be accessible for painting.



6. There would be a total of 49 smaller cubes on each of the three exposed surfaces which would be painted. Out of these, if we count 49 smaller cubes on the top exposed surface, then in the lateral surfaces we would get an additional 42 and 36 cubes respectively which would be painted. Thus a total of 127 smaller cubes would be painted and hence, 216 cubes out of 342 would not be painted even on one side.

Alternately, you can think of this as $6 \times 6 \times 6 = 216$ as if we remove the top layer on all three lateral surfaces, we would get a total of 216 smaller cubes which would get uncovered.

Option (d) is the correct answer.

7. The cubes on the three edges of the intersection of the exposed surfaces would be painted on two or more surfaces.

Thus, on each of the exposed surfaces there would be 36 cubes, which would be painted only on one side. Thus, the total number of cubes, which would be painted only on one side would be equal to $36 + 36 + 36 = 108$.

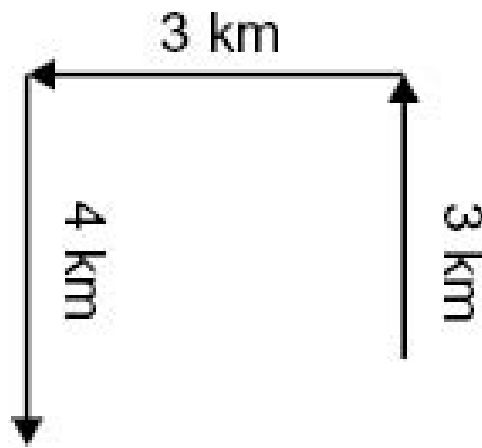
Option (a) is correct.

8. At most two faces painted means we need to exclude the smaller cube/s which have three faces painted. In this situation there would be only 1 cube which would have 3 faces painted. Hence the correct answer would be $343 - 1 = 342$.

Option (b) is correct.

Solutions for Questions 9 and 10:

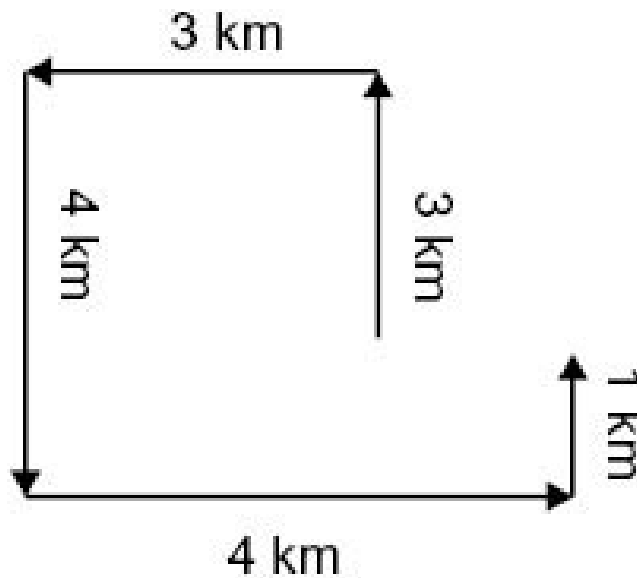
9. The movement, which would occur in this case, would look as follows:



From the figure it is clear that if he wants to go back to the starting point he needs to travel 1 km north and 3 km east. Thus, the route described in II gets him back to his starting point. The other routes specified in (I) and (III) do not get him back to the starting point.

10. In this case his movement would be as follows:

From the figure it is clear that he would be 1 km from his starting point.



Solutions for Questions 11 to 15:

In order to solve this set of questions you need to build a table showing how the values of X and Y move in every iteration. Questions 51 to 54 will be solved based on the following table:

	Value of X	Value of Y	
Starting point	3	2	
First iteration ($X = XY$ and $Y = Y + 1$)	6	3	
Second iteration	18	4	
Third iteration	72	5	
Fourth iteration	360	6	Stop here when $N = 100$
Fifth iteration	2160	7	Stop here when $N = 500$

The answers can then be interpreted from this table:

- 11. The machine would stop after 4 iterations. Option (c) is correct.
- 12. The final value of X is 360. Option (d) is correct.
- 13. The final value of Y (after the fourth iteration when X crosses 100) is 6. Option (c) is correct.
- 14. There would be an additional iteration in this case (the fifth one) and the value of X would land at 2160. Option (d) is correct.
- 15. The following table would define the iterations in this case:

	Value of X	Value of Y	
Starting point	2	3	
First iteration (X = XY and Y = Y + 1)	6	4	
Second iteration	24	5	
Third iteration	120	6	Stop here when $N \leq 120$
Fourth iteration	720	7	Stop here when $N > 120$

From the above table it is clear that the fourth iteration would be necessitated only if the value of N is 121 or more than that. From amongst the options the minimum value of N possible is 300 for the fourth iteration to take place and the value of Y to end at 7.

Solutions for Questions 16 to 20:

The following are the basic possibilities that emerge in this case based on the possible outcomes given for who comes first and who comes last:

Possibility 1

Position	Person
1	Raman
2	
3	
4	
5	
6	
7	Tony

OR POSSIBILITY 2:

Position	Person
1	Sunil

2	
3	
4	
5	
6	
7	Deepak or Ankit

Besides we also know that Vicky > Priya > Ankit.

Based on this initial thought we can move into the questions and the process for solving from this point would be to add the information given in the question to the respective possibilities and see what cases emerge, and hence what conclusions emerge.

16. If Sunil is ranked sixth, it is clear that we are moving to Possibility 1:

The table structure becomes:

Position	Person
1	Raman
2	
3	
4	
5	Ankit
6	Sunil
7	Tony

This leaves us with Vicky > Priya and also Deepak to place in the above grid. Now clearly, the first three options can be rejected because Vicky has to be placed 2nd or 3rd and hence saying he finished fourth or fifth cannot be true. Thus, option (a) is rejected. Similarly, Raman has to be first in this scenario and thus option (b) is also not true. Option (c) is also not true as Tony is compulsorily ranked 7th in this case. Thus, option (d) is correct —as Deepak can be ranked 3rd or 4th.

Option (d) is the correct answer.

17. From the above analysis it is clear that if Raman is ranked first we are clearly talking about the first possibility and hence, Vicky cannot be ranked lower than 3rd as he has to be ranked either 2nd or 3rd.

Option (b) is correct.

18. In this case we are told that Ankit is ranked 2nd. However looking at the original possibilities given to us we can clearly realise that this is not possible. Hence, the ideal answer would be that this is not possible.

However, none of the options tells us that. Hence, option (d) is the correct answer.

19. If Sunil is ranked second we are moving to possibility 1:

The table structure becomes:

Possibility 1

Position	Person
1	Raman
2	Sunil
3	
4	
5	
6	
7	Tony

We also know that Vicky > Priya > Ankit.

In this scenario,

Option (b): Vicky > Sunil is not possible (option (b) is rejected).

Option (c): Priya > Raman is also not possible. (option (c) is rejected).

Option (d): Priya > Vicky is also not possible as it is given clearly that Vicky gets more than Priya.

Only the first option is possible as we can have the following arrangement:

Position	Person
1	Raman
2	Sunil
3	Deepak
4	Vicky
5	Priya
6	Ankit
7	Tony

20. If Vicky is ranked fifth, since we need to compulsorily fit Priya and Ankit below Vicky in that order we will have to move to the second possibility table:

Possibility 2

Position	Person

1	Sunil
2	
3	
4	
5	Vicky
6	Priya
7	Ankit

In this situation, the only ‘must true’ option is the one which states that Sunil scores the highest.

Option (a) is correct.

21. The conclusion drawn in the passage talks about Party Z being likely to win the election. Obviously if we know that only 35% of the people favour party Z (as stated in option (c)), party Y would be expected to win the election—as the estimates for how many people support party Y varies from 40% (at worst) to 46% (at best). Even, in the worst case scenario for Party Y, Party Z would still not be likely to win the next election.

Thus, option (c) seriously weakens the conclusion.

22. The stock markets find their levels based on long term expectations of results of businesses in the economy. Obviously, if it is known that much of the inflation was the result of the rise in food prices due to a summer drought (which in essence is a short term effect), the stock markets would not need to panic and change their levels drastically, thereby being steady in the short run.

Thus, option (d) is the best explanation for the reaction of the stock market.

23. The original relationship between birth: dirge signifies the beginning and the end of life. Birth being the start of life, dirge which means a funeral hymn or lament signifies the end of life.

The same relationship is exhibited in the pair Marriage: alimony, where marriage signifies the start of a relationship and alimony is something that signals the end of the relationship.

24. The argument in the question is based on the premise that just because the city’s beaches are the most overcrowded in the state, so it must be true that beautiful beaches attract people. The reasoning is akin to making a generic conclusion about something based on one observation.

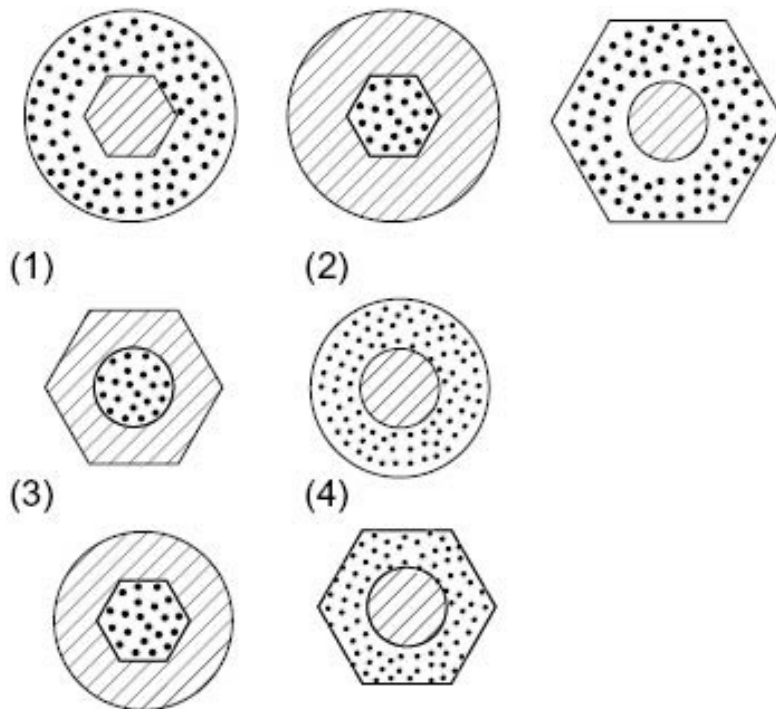
Similar reasoning is shown by option (d) because it uses a similar kind of logic to make a conclusion. The whole conclusion is based on one fact, viz: just because my dog suffers more fleas during hot weather, it follows that fleas must thrive in a warm environment.

25. The conclusion in option (d) is the most valid in this case because the question clearly states that all underground industries are not included in national productivity measures—and that there are some industries run by self-employed industrialists, which are included in national productivity measures. Obviously this means that there are at least some industries run entirely by self-employed industrialists that are not underground industries (as they are included in national productivity measures).

26. The argument is directly linking ‘Not receiving a violation from the Federal Aviation’ to being a good pilot. Thus, it is based on a hidden assumption which can be stated as—not receiving a violation from Federal Aviation means the pilot is a good pilot.
27. The argument is a general conclusion (about a large topic) based on a specific example of 1 individual. Thus, option (c) is correct.
28. The value of the middle number in every row is equal to half the sum of the other numbers in the row. This can be verified by looking at any of the first four rows. In the first row $(4+2)/2 = 3$; a similar logic exists for the other rows. The missing number is $(9+3)/2 = 6$.
29. The cause-effect relationship specified in the question, tells us that:
Fewer restrictions on advertising of legal services Æ More lawyers advertise their services
 Æ Lawyers who specify a specific service generally charge less for the service.
Based on this reasoning, the author is concluding that:
If restrictions on advertising specifying fee arrangements are removed Æ lower legal costs.
If this were true, it would happen only if more lawyers end up advertising their services.
Option (c) states exactly that and hence is the correct answer.
30. If the condition stated in option (d) were to be true; that the lawyers who begin to advertise do not lower their fees, naturally the conclusion that there would be a drop in legal costs would be weakened most seriously.
Hence, option (d) is the correct answer.

SNAP 2010

1. Which of the designs best completes the following sequence?



2. Four children A, B, C & D are having some chocolates each.

A gives B as many as he already has, he gives C twice of what C already has and he gives D thrice of what D already has.

Now, D gives $(1/8)$ th of his own chocolates to B.

Then A gives 10% chocolates he now owns to C and 20% to B.

Finally, all of them have 35 chocolates each.

What is the original number of chocolates each had in the beginning?

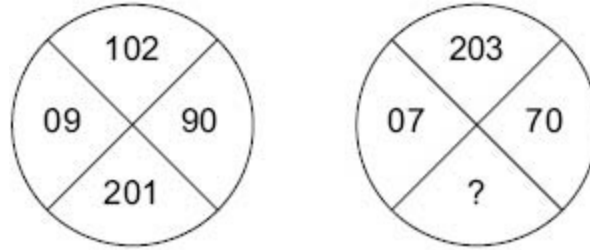
- (a) A-110, B-10, C-10, D-10

(b) A-90, B-20, C-20, D-10

(c) A-70, B-25, C-25, D-20

(d) A-125, B-5, C-5, D-5

3. There are two similar figures below with some numbers. The left one is complete whereas one number is missing in the right one. Find a suitable number to fill in place of the question mark.



(a) 280

(c) 303

(c) 362

(d) 382

4. Complete the following series by replacing the ?:

(TBLD, VEPI, XHTN, ?)

(a) ZJVP

(b) ZVJP

(c) ZKXS

(d) ZKXP

5. In a cricket team, three batsmen Ricky, Sachin and Brian are the top three run-scorers in any order. Each of them gives two replies to any question, one of which is true and the other is false, again, in any order. When asked about who the top scorer was, following were the replies they gave:

Sachin: I got the top score. Ricky was second.

Brian: I got the top score. Sachin was second.

Ricky: I got the top score. Sachin was third.

Which of the following is the correct order of batsmen who got the top score, second best and third best score respectively?

(a) Brian, Ricky, Sachin

(b) Brian, Sachin, Ricky

(c) Ricky, Sachin, Brian

(d) Sachin, Brian, Ricky

6. 60 employees in an office were asked about their preference for tea and coffee. It was observed that for every 3 people who prefer tea, there are 2 who prefer coffee. For every 6 people who prefer tea, there are 2 who drink both of tea and coffee. The number of people who drink both is the same as those who drink neither.

How many people drink both tea and coffee?

(a) 10

(b) 12

(c) 14

(d) 16

7. A clock strikes once at 1 o'clock, twice at 2 o'clock and so on. If it takes 6 seconds to strike at 3 o'clock, how much time will it take to strike at 9 o'clock?

(a) 24 seconds

(b) 18 seconds

(c) 20 seconds

(d) None of these

Directions for Questions 8 and 9: E-1, E-2 and E-3 are three engineering students writing their assignments at night. Each of them starts at a different time and completes at a different time. The digit in their name and the order of their starting and completing the assignment is certainly not the same. The last student to start is the first to complete the assignment.

8. Who is the first student to start writing the assignment?

(a) E-1

(b) E-2

(c) E-3

(d) Cannot be determined

9. Who is the last student to complete the assignment?

(a) E-1

(b) E-2

(c) E-3

(d) Cannot be determined

Directions for Questions 10 and 11: A, B and C are three students from Don School and P, Q and R are three students from Elite School. Q is brighter than R but duller than the Don School student who is brighter than A. The same Don School student is duller than P but is brighter than C.

10. Who is the brightest amongst all?

(a) B

(b) P

(c) R

(d) Cannot be determined

11. Who is the dumbest amongst the three students from Elite School?

(a) P

(b) Q

(c) R

(d) Cannot be determined

12. When Rafael entered the class, there were already 10 students in the class. 5 students entered the class between Roger and Rafael. Total 10 students entered after Roger. Exactly how many students are in the class finally?

(a) 15

(b) 25

(c) 27

(d) Cannot be determined

Directions for Questions 13 to 15: Arijit, Biplab, Chintan, Debashish, Elangovan, Frederick Gautam and Himadri are sitting around a circular table. Some information about the order in which they are sitting is available as follows:

- (a) Debashish is sitting opposite to Himadri and to the immediate right of Gautam.

(b) Elangovan is sitting to the immediate right of Biplab.

(c) Arijit is sitting opposite Chintan who is not immediately next to Frederick on either side.

13. Who is sitting to the immediate right of Himadri?

(a) Arijit

(b) Debashish

(c) Elangovan

(d) Frederick

14. Who is sitting opposite Biplab?

(a) Arijit

(b) Debashish

(c) Frederick

(d) Himadri

15. Who is to the immediate right of Chintan?

(a) Arijit

(b) Biplab

(c) Elangovan

(d) Himadri

Directions for Questions 16 and 17: A, B, C, D and E sit on a long bench. C does not sit next to A or E. A and E have three persons sitting between them.

16. Who is sitting in the middle of the bench?

(a) B

(b) C

(c) D

(d) None of these

17. Who are sitting at the extreme ends of the bench?

(a) A & E

(b) B & D

(c) C & E

(d) None of these

18. Find the Missing Numbers in the following set

2	4	6	8	10
2	14	34	??	98

(a) 30

(b) 62

(c) 42

(d) 78

19. There are 6 volumes of books on a rack kept in order (such as, vol. 1, vol. 2 and so on). After some readers used them, their order got disturbed. The changes showed as follows:

Vol.5 was directly to the right of vol.2.

Vol.4 has vol.6 to its left and both were not at Vol.3's place.

Vol.1 has Vol.3 on right and Vol.5 on left.

An even numbered volume is at Vol.5's place.

Find the order in which the books are kept now, from the 4 given alternatives:

(a) 6, 3, 5, 1, 4, 2

(b) 4, 6, 3, 5, 1, 2

(c) 3, 4, 1, 6, 5, 2

(d) 2, 5, 1, 3, 6, 4

20. All German philosophers, except for Marx, are idealists. From which of the following can the statement above be most properly inferred?
- (a) Except for Marx, if someone is an idealist philosopher, then he or she is German.
 - (b) Marx is the only non-German philosopher who is an idealist.
 - (c) If a German is an idealist, then he or she is a philosopher, as long as he or she is not Marx.
 - (d) Marx is not an idealist German philosopher.
21. Ramaswami was studying for his examinations and the lights went off. It was around 1:00 a.m. He lighted two uniform candles of equal length but one thicker than the other. The thick candle is supposed to last six hours and the thin one two hours less. When he finally went to sleep, the thick candle was twice as long as the thin one.
- For how long did Ramaswami study in candle light?
- (a) 2 hours
 - (b) 3 hours
 - (c) 2 hours 45 minutes
 - (d) 4 hours
22. The numerator and denominator of a fraction is in the ratio 2:3. If 6 is subtracted from the numerator the value of the fraction becomes $\frac{2}{3}$ of the original fraction. The numerator of the original fraction is:
- (a) 16
 - (b) 21
 - (c) 18
 - (d) 30
23. A person wanted to withdraw X rupees and Y paise from the bank. But the cashier made a mistake and gave him Y rupees and X paise. Neither the person nor the cashier noticed that. After spending 20 paise, the person counts the money. To his surprise, he has double the amount he wanted to withdraw.
- Find X and Y. (1 Rupee = 100 Paise)
- (a) X = 3, Y = 6
 - (b) X = 26, Y = 53
 - (c) X = 15, Y = 30
 - (d) X = 9, Y = 36
24. A drawer contains 10 black and 10 brown socks which are all mixed up. What is the fewest number of socks you can take from the drawer without looking and be sure to get a pair of the same color?
- (a) 7 pairs
 - (b) 7 pieces only
 - (c) 10 pieces only
 - (d) 3 pieces only
25. A placement company has to assign 1000 SW personnel who are skilled in Java and Dot Net to a prospective outsourcing company. He finds that 750 are having Dot Net skills and 450

have Java skills. Some have skills in both Java and Dot Net. Find the numbers who have skills in both Java and Dot Net.

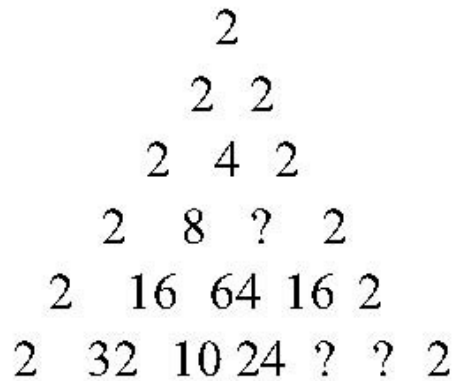
- (a) 250 (b) 200
(c) 350 (d) 100

26. All good athletes who want to win are disciplined and have a well balanced diet. Therefore, athletes who do not have well balanced diets are bad athletes.

Based on the sentence above which of the statement below strongly supports the view:

- (a) No bad athlete wants to win.
(b) No athlete who does not eat a well balanced diet is a good athlete.
(c) Every athlete who eats a well balanced diet is a good athlete.
(d) All athletes who want to win are good athletes.

27. The numbers in these series are arranged in a triangle which has a logic as shown below. Find the missing numbers shown as (?) from the choices given below:



- (a) {16, 32, 64} (b) {8, 1024, 32}
(c) {24, 1024, 64} (d) {16, 32, 64}

28. If for a particular value of the variable x , the following holds good, $17 = 17x/(1 - x)$, then compute the value of $(2x)*x$.

- (a) 17 (b) 1
(c) 2 (d) $1/2$

Answer Key

1. (a)	2. (a)	3. (a)	4. (c)
5. (a)	6. (b)	7. (a)	8. (c)
9. (a)	10. (b)	11. (c)	12. (c)
13. (a)	14. (c)	15. (b)	16. (b)
17. (a)	18. (b)	19. (d)	20. (d)

21. (b)	22. (b)	23. (b)	24. (d)
25. (b)	26. (b)	27. (b)	28. (d)
-

Solutions:

- The structure of the diagram remains the same from the first to the second figures, the only difference between the two being that the dots come inside the inner figure and the diagonal shading goes outside.

The same change would be seen from the third to the fourth figure. Thus, option (a) is the correct answer.

- Solve this one through options:

For option (a) the numbers would move in this fashion:

	A	B	C	D
Start	110	10	10	10
Round 1: A gives to others	50	20	30	40
Round 2: D gives	50	25	30	35
Round 3 = Final situation: A gives	35	35	35	35

Thus, the numbers in the first option match the conditions in the question. Option (a) is correct.

- In the first figure the number at the bottom is the addition of the other three numbers in the circle. $102 + 9 + 90 = 201$.

Thus, the missing number in the second case would be: $203 + 7 + 70 = 280$. Option (a) is correct.

- The four series that are running in the words are:

- First letter of every word: T, V, X. So the missing letter is Z (as there is one letter missing between T and V, so also between V and X). Thus, after X we would skip Y and use Z as the first letter of the last word.
- Second letter of every word: B, E, H. So the missing letter is K (as there are two letters missing between B and E, so also between E and H). Thus, after H we would skip I and J and use K as the second letter of the last word.
- Third letter of every word: L, P, T. So the missing letter is X (as there are three letters missing between L and P, so also between P and T). Thus, after T we would skip U, V and W and use X as the third letter of the last word.)
- Similarly D-I-N-S. (skip 4 letters).

Thus, the correct answer would be ZKXS. Option (c) is correct.

- Option (b) can be rejected because if that is the correct order of finishing both of Brian's statements would be true which is not possible as per the conditions stated in the question, as one statement has to be true and the other has to be false for each of the three.

Similarly option (c) can be rejected because, if that order were true both of Sachin's

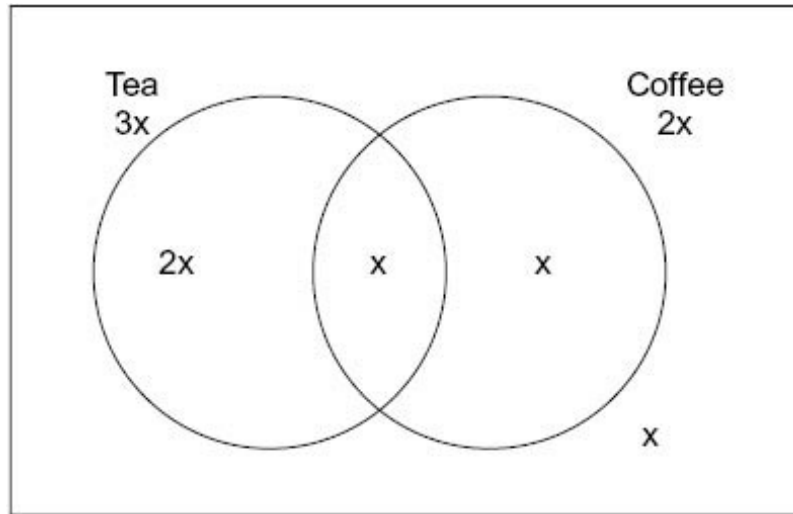
statements would turn out to be false.

Option (d) is also rejected as if that order were true, both of Brian's statements would end up being false.

Option (a) is true as it gives 1 true and 1 false statement for each of the three.

Thus, option (a) is the correct answer.

6. The following Venn diagram would make things clear in this case:



The above Venn diagram shows that $5x = 60 \Rightarrow x = 12$.

Hence, the number of people who drink both tea and coffee is 12.

7. The clock strikes thrice at 3 o'Clock and the time it would take to strike 3 o'Clock would essentially be due to two time periods between strikes of the clock. If the clock takes 6 seconds to strike 3 o'clock it means that the time period between 2 strikes of the clock is 3 seconds. Thus, to strike 9, it would take 8 strikes of the clock – which means that it would take 24 seconds to strike 9.

Option (a) is correct.

Solutions for Questions 8 and 9:

The last to start is the first to complete and this cannot be either E-1 or E-3 as the digit in their names is certainly not the same as the order of their starting or ending the assignment. Thus, the last to start and the first to finish has to be E-2. Naturally then, E-3 would be the first to start and since he cannot complete the assignment last, he would be completing the assignment second last. E-1 would be the second to start and the last to finish.

Thus, the following would give us the final grid about the starting and finishing orders:

Name	Starting position	Ending position
E-1	2nd	3rd
E-2	3rd	1st
E-3	1st	2nd

The answers would then be:

8. E-3 would be the first to start. Option (c) is correct.
9. E-1 is the last to complete the assignment. Option (a) is correct.

Solutions for Questions 10 and 11:

Reading the basic conditions should make you string a few logics together as follows:

1. Since Q is brighter than R, but is duller than the Don School student who is duller than P we have the order $P > Q > R$ in terms of brightness of the Elite school students.
2. There is one Don school student who is brighter than A. Thus, A must be the second brightest Don School student. Also, since the same Don School student is brighter than C we are talking about B. Thus, the Don School students in terms of brightness would be: $E > A > C$.

It is also known that B is duller than P. Thus we can move to answer the questions.

10. P is the brightest as he is brighter than B (hence brighter than A and C) as well as brighter than Q and R. Option (b) is correct.
11. R is the dumbest amongst the Elite school students and the logic is explained in the explanation above.
12. There are two scenarios possible as follows:

Scenario 1: Order between Roger and Rafael is Roger then Rafael. In this case the thought process is as follows:

Since, Rafael is 11th, Roger would be the 5th person to enter the class. Also, since there are 10 people who enter the class after Roger, there would be a total of 15 people in the class finally.

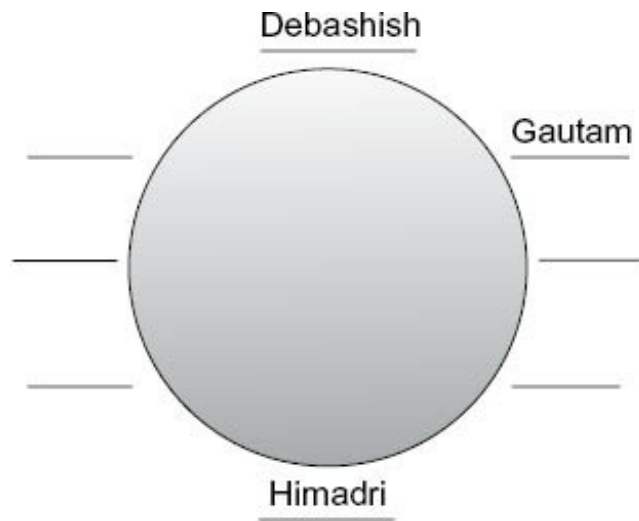
Scenario 2: Order between Roger and Rafael is Rafael then Roger. In this case the thought process is as follows:

Since, Rafael is 11th, Roger would be the 17th person to enter the class. Also, since there are 10 people who enter the class after Roger, there would be a total of 27 people in the class finally.

Option (c) is correct.

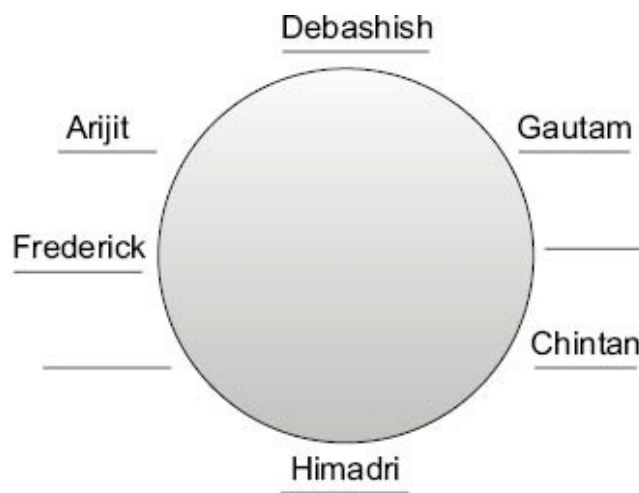
Solutions for Questions 13 to 15:

The following logical thinking would help you reach the final figure. Using the first clue we get the following figure:



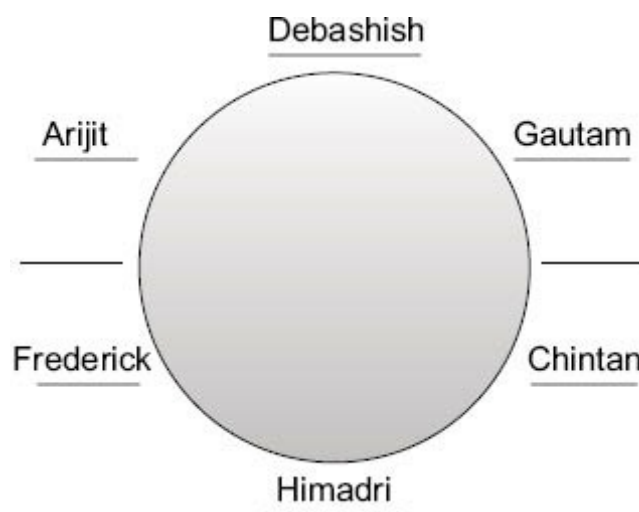
At this point we use the third clue which gives us the following possible diagrams:

Possibility 1:



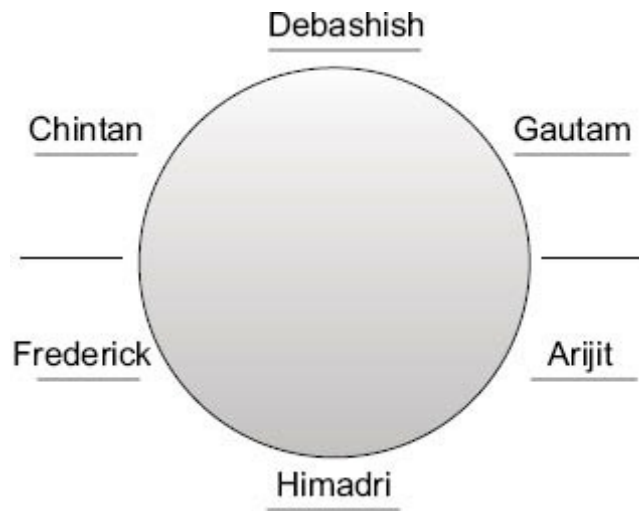
This possibility is rejected as Elangovan has to be to the immediate right of Biplab, but the two places left are not together.

Possibility 2:



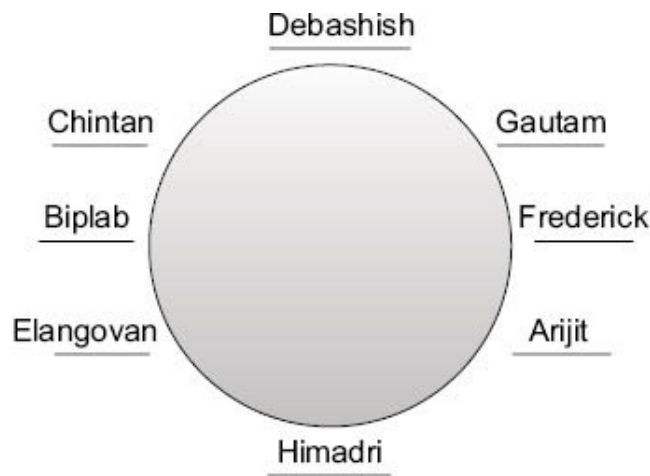
This possibility is also rejected as we cannot place Elangovan and Biplab next to each other in this case. So we move to the next possibility of placing Chintan, Arijit and Frederick.

Possibility 3:

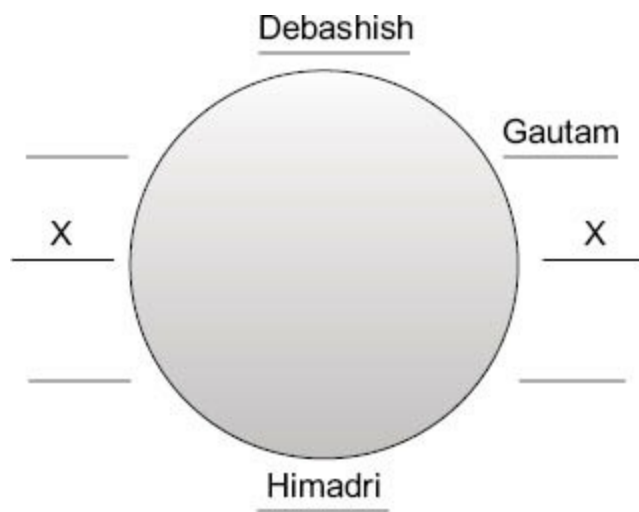


Again this possibility is not possible as we do not have two adjacent places for Biplab and Elangovan.

Possibility 4:



This is the only possibility of meeting all the three conditions of seating arrangements for the 8 people around the circle and hence is the correct arrangement. This is because any arrangement where Chintan and Arijit occupy the opposite positions as shown in the figure below by “X” would not give us 2 adjacent seats for Biplab and Elangovan.



Thus the final arrangement is the one we got in possibility 4.
The answers can be read off this arrangement.

13. Arijit is sitting to Himadri's immediate right. Option (a) is correct.
14. Frederick is sitting opposite Biplab. Option (c) is correct.
15. Biplab is to Chintan's immediate right. Option (b) is correct.

Solutions for Questions 16 and 17:

The arrangement of the 5 people would be as below:

A/E		C		E/A

The answers are:

16. C is sitting in the middle of the bench. Option (b) is correct.
17. A and E are at the extreme ends of the bench. Option (a) is correct.
18. The logic of the second row is:
[Square of the number immediately above it – 2]
Thus, $2^2 - 2 = 2$; $4^2 - 2 = 14$; $6^2 - 2 = 34$;
Hence, $8^2 - 2 = 62$.
Option (b) is correct.
19. Check the options to see which one fits all the conditions. If we check for adherence to the first condition itself we can see that only option (d) satisfies the first condition, viz: Vol 5 is directly to the right of Vol 2. Option (d) is correct.
20. If you were to look at the logic of the statements, none of the four statements perfectly leads to the conclusion: All German philosophers except for Marx are idealists. In this context, only option (d) to some extent justifies the conclusion, if we were to know further that he is the only one amongst the German philosophers who is not an idealist. The other options do not lead to this conclusion by any stretch of logic/imagination.
In the light of there not being a better answer to the question, option (d) is to be chosen as the correct answer.
21. Option (b) is correct. Assume that, the candles had a length of 6 inches each. In 3 hours, the thicker candle would be half as long as its original length. Thus, the thicker candle would be 3 inches long. The thinner candle in the same time would be only 1/4th as long as its original length. Thus, the thinner candle would be 1.5 inches long after 3 hours. Thus, if both candles burn for 3 hours, the thicker candle is double the length of the thinner candle. Option (b) is the correct answer.
22. Trial and error gives us that in case the original ratio is 18/27, the new ratio would be 12/27 – a value of 0.4444. Option (b) is correct.
23. Use trial and error with the values in the options.
Option (a) fails the test because if X and Y are 3 and 6 respectively he would get 6 Rupees 3 paise instead of 3 Rupees 6 paise. After spending 20 paise he has ` 5.83 which is not the double of 3.06. Option (a) is hence, rejected.
Checking option (b). He gets ` 53.26 and after spending 20 paise he is left with ` 53.06. The original amount he wanted to withdraw was ` 26.53. Thus, the amount he has left with him after spending 20 paise is double the amount he had wanted to withdraw. This is the condition

in the problem that needs to be satisfied. Hence, option (b) is the correct answer.

24. If you were to take out 3 pieces, you would be sure to get a pair of the same color in all cases. Option (d) is correct.
25. 1000 people are counted 1200 times in this case. The only explanation for this is that there is an overlap of 200 people who have both Dot Net and Java skills. Option (b) is correct.
26. The statement in option (b) best supports the sentence most strongly. The original sentence basically tells us that any athlete who does not have a well balanced diet is a bad athlete. The statement “No athlete who does not eat a well balanced diet, is a good athlete” essentially says the same thing by using a double negative.

Note that option (c) is also close here, but the reason we can reject it is that it means something to the effect that—any athlete who eats a well balanced diet is a good athlete. This means that “eating a balanced diet” is a necessary and sufficient condition to being a good athlete.

However, the condition “eating a well balanced diet” is a necessary but not a sufficient condition for being a “good athlete”.

27. The balance of the grid would be maintained only by using the numbers – 8, 1024 and 32 in the missing places.

				2				
	2						2	
	2			4			2	
	2		8		8		2	
2		16		64		16		2
2		32	1024		1024	32		2

Option (b) is correct.

28. $17 = 17x/(1 - x) \Rightarrow 17 - 17x = 17x \Rightarrow 34x = 17 \Rightarrow x = 0.5$

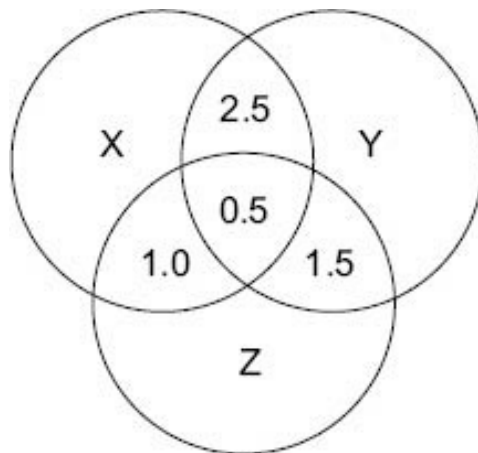
Thus, $(2x)*x = \frac{1}{2}$. Option (d) is correct.

Directions for Questions 1 and 2: Answer the questions based on the information given below

The Venn diagram given below shows the estimated readership of 3 daily newspapers (X, Y & Z) in a city. The total readership and advertising cost for each of these papers is as below:

Newspapers	Readership (lakhs)	Advertising cost (` per sq. cm)
X	8.7	6000
Y	9.1	6500
Z	5.6	5000

The total population of the city is estimated to be 14 million. The common readership (in lakhs) is indicated in the given Venn diagram



- The number of people (in lakhs) who read at least one newspaper is
 - 4.7
 - 11.9
 - 17.4
 - 23.4
- The number of people (in lakhs) who read only one newspaper is

(a) 4.7

(b) 11.9

(c) 17.4

(d) 23.4

3. What number should replace the question mark in the image below?

6	12	?
48	96	192

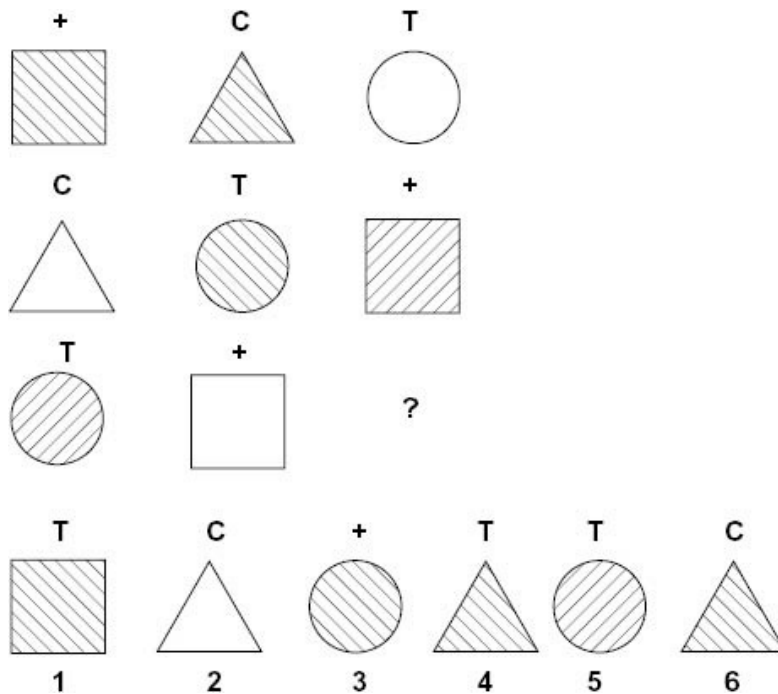
(a) 18

(b) 20

(c) 22

(d) 24

4. What image from bottom row should replace the question mark?



(a) 4

(b) 6

(c) 1

(d) none

5. There are 3 societies A, B, C having some tractors each.

A gives B and C as many tractors as they already have.

After some days B gives A and C as many tractors as they have.

After some days C gives A and B as many tractors as they have.

Finally each has 24 tractors. What is the original number of tractors each had in the beginning?

(a) A-29, B-21, C-12

(b) A-39, B-21, C-12

(c) A-21, B-12, C-29

(d) A-21, B-12, C-39

6. Although most of the fastest growing jobs in today's economy will require a college degree, many of the new jobs being created from home health aide to desktop publisher require knowledge other than gained from earning a degree. For workers in those jobs, good basic skills in reading, communication and mathematics play an important role in getting a job and developing a career.

From the information given above it can be validly concluded that, in today's economy

- (a) skills in reading, communication and mathematics play an important role in developing a career as a desktop publisher.
 - (b) the majority of the new jobs being created require knowledge other than that gained from earning a college degree.
 - (c) a job as a home health aide will rely more on communication skills than on basic skills in reading and mathematics.
 - (d) if a job is one of the fastest growing jobs, it will require a college degree.
7. According to the National Agricultural Aviation Society (NAAS), without the use of crop protection products to control insects, weeds and diseases, crop yields per acre will drop by more than 50 per cent. The first aerial application of insecticide occurred in 1921, and it was a huge success. By contrast, in today's economy all aircraft that are classified as aerial applicators do more than just apply insecticide; today, they also spread seeds and apply fertiliser.

From the information given above it CANNOT be validly concluded that

- (a) according to the NAAS, if crop yields per acre never drop by more than 50 per cent then crop protection products have been used to control insects, weeds and diseases.
 - (b) in today's economy any aircraft that cannot be used to apply fertilizer cannot be classified as an aerial applicator.
 - (c) in today's economy, if an aerial applicator is used, then it will be able to spread seeds and apply fertilizer.
 - (d) according to the NAAS, if crop yields per acre drop by more than 50 per cent, then crop protection products have not been used to control insects, weeds and diseases.
8. Lou observes that if flight 409 is cancelled, then the manager could not possibly arrive in time for the meeting. But the flight was not cancelled. Therefore, Lou concludes that the manager will certainly be on time. Evelyn replies that even if Lou's premises are true, his argument is fallacious. And therefore, she adds that the manager will not arrive on time after all.

Which of the following is the strongest thing that we can properly say about this discussion?

- (a) Evelyn is mistaken in thinking Lou's argument to be fallacious, and so her own conclusion is unwarranted.
- (b) Evelyn is right about Lou's argument, but nevertheless her own conclusion is unwarranted.

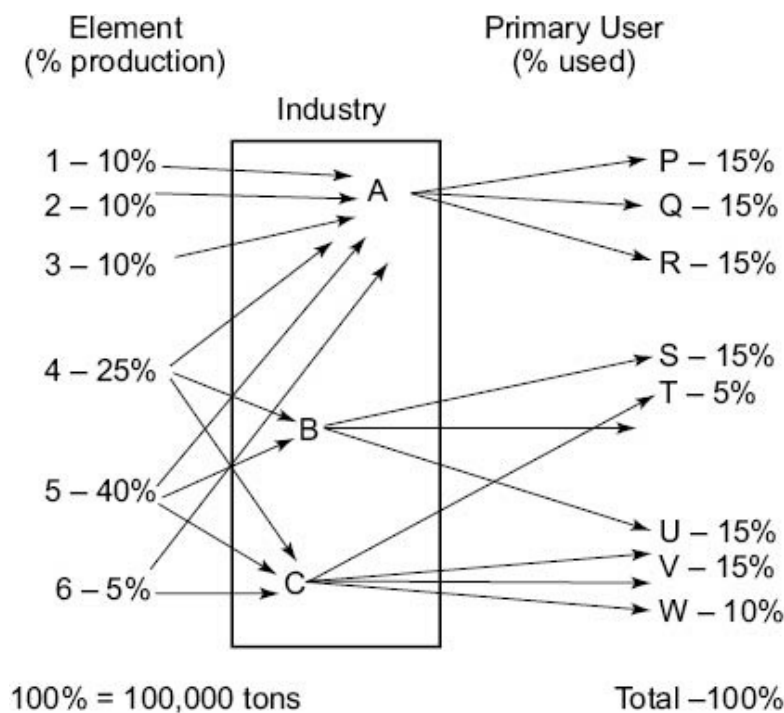
- (c) Since Evelyn is right about Lou's argument, her own conclusion is well supported.
 (d) Since Evelyn is mistaken about Lou's argument, her own conclusion must be false.

9. Cars are safer than planes. Fifty per cent of plane accidents result in death, while only one per cent of car accidents result in death.

Which of the following, if true, would most seriously weaken the argument above?

- (a) Planes are inspected more often than cars.
 (b) The number of car accidents is several hundred thousand times higher than the number of plane accidents.
 (c) Pilots never fly under the influence of alcohol, while car drivers often do.
 (d) Plane accidents are usually the fault of air traffic controllers, not pilots.

Directions for Questions 10 to 12: Refer to the chart below showing annual production and answer the questions that follow.



10. Which industry/industries contribute/contributes to company S?
 (a) Industry A and B only
 (b) B and C only
 (c) A and C only
 (d) B only
11. Industry B processes what percentage of the total production of listed elements?
 (a) 25% (b) 65%
 (c) 40% (d) Cannot be determined
12. Of the listed elements processed by Industry A, how many tons are produced annually?
 (a) 30,000 (b) 45,000

(c) 100,000

(d) 55,000

Directions for Questions 13 to 16: In each of the following questions there are two blanks marked I & II. The words to fill in these blanks are given against I as (A, B, C, D) and II as (P, Q, R, S) respectively.

The right words to fill in these blanks are given as four alternatives. The words on either side of the sign (::) have a similar relationship. That alternative which signifies this relationship is your answer.

13. I : Increase :: Descend : II

I. (A) Grow

(B) Ascend

(C) Rise

(D) Price

II. (P) Reduce

(Q) Down

(R) Decrease

(S) Mountain

(a) AR

(b) RB

(c) CP

(d) DQ

14. Modern : I :: II : Old

I. (A) Ancient

(B) Death

(C) Famous

(D) Civilization

II. (P) Industrialisation

(Q) Young

(R) Fashion

(S) Western

(a) AQ

(b) AS

(c) BP

(d) CR

15. Part : I :: Class : II

I. (A) Section

(B) Whole

(C) School

(D) Students

II. (P) Student

(Q) School

(R) Teachers

(S) Room

(a) AR

(b) BQ

(c) CP

(d) DS

16. Summit : Apex :: I : II

I. (A) Beautiful

(B) Picture

(C) Attractive

(D) Enhancing

II. (P) Comfortable

(Q) Pretty

(R) Healthy

(S) Brave

(a) AQ

(b) BP

(c) DS

(d) CR

17. If in a certain code BEAUTIFUL is coded as 573041208, BUTTER as 504479, how FUTURE coded in that code?

(a) 201497 (b) 204097

(c) 704092 (d) 204079

18. How many Mondays are there in particular month of a particular year if the month ends on Wednesday?

(a) 4 (b) 5

(c) 3 (d) Cannot be specified

Directions for Questions 19 and 20: There are two rows of numbers in each question. The upper row is complete and in the lower row one number is missing.

Find a suitable number to fill the blank space so that the symmetry with the upper row is maintained.

19.

17	102	12
15	?	10

(a) 211

(b) 75

(c) 125

(d) 117

20.

12	336	14
15	?	16

(a) 220

(b) 480

(c) 125

(d) 450

Directions for Questions 21 and 22: Seven People A, B, C, D, E, F, G plan to enjoy boating.

There are only two boats, and the following conditions are to be kept in mind.

(I) A will go in the same boat in which E is to go.

(II) F cannot go in the same boat in which C is, unless D is also accompanying.

(III) Neither B nor C can be given the boat in which G is.

(IV) The maximum number of persons in one boat can be four only.

21. If F and B are in one boat, which of the following statements is true?

(a) G is in the other boat.

(b) D is in the other boat.

(c) C is in the other boat.

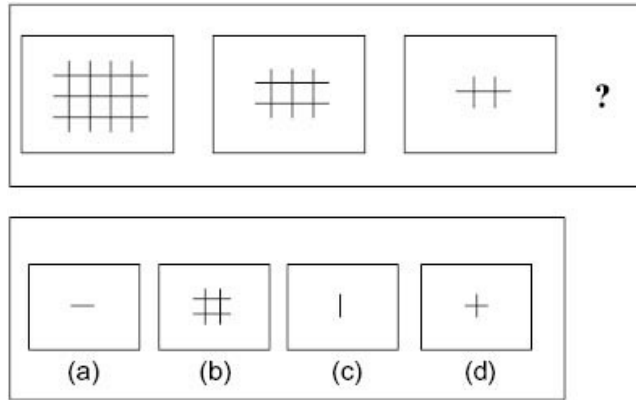
(d) E is with F and B in one boat.

22. If E gets the boat with F, which of the following is the complete and accurate list of the people who must be sitting in the other boat?

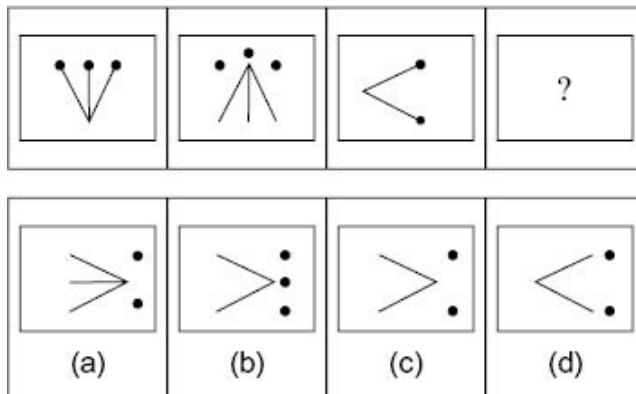
- (a) F and E (b) G and A
(c) D and A (d) C, D and B

Directions for Questions 23 and 24: A series of figures has been shown on the left. Find the figure in the place of ? from the figures on the right.

23.



24.



25. Complete the following series.

(GMSY, IOVA, KQWC, ?)

- (a) MSYE (b) NSYE
(c) MYTE (d) MSYF

Answer Key

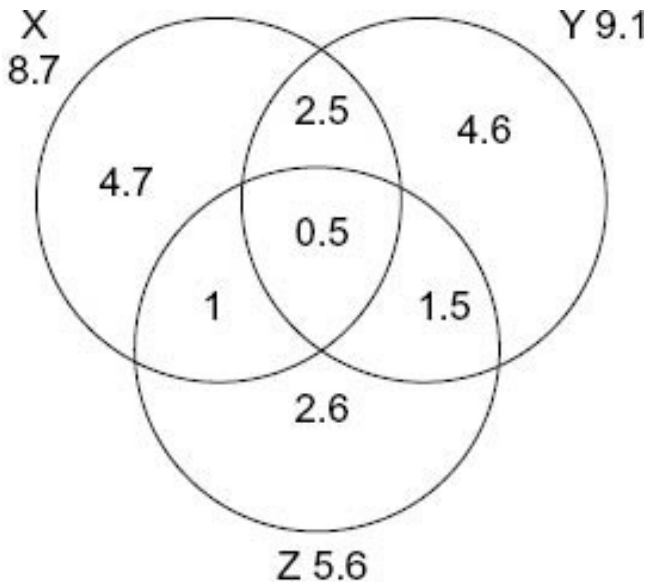
1. (c)	2. (b)	3. (d)	4. (b)
5. (b)	6. (a)	7. (d)	8. (b)
9. (b)	10. (d)	11. (d)	12. (b)
13. (b)	14. (a)	15. (b)	16. (a)
17. (b)	18. (d)	19. (b)	20. (b)

21. (a)
22. (d)
23. (c)
24. (c)
25. (a)

Solutions:

Solutions for Questions 1 and 2:

The following figure shows the completed Venn diagram based on the information in the table:



The answers can be easily read off once we know the above figure.

1. The number of people who read at least 1 newspaper is $2.5 + 0.5 + 1 + 4.7 + 4.6 + 1.5 + 2.6 = 17.4$. Option (c) is the correct answer.
2. The number of people reading only 1 newspaper would be: $4.7 + 4.6 + 2.6 = 11.9$. Option (b) is correct.
3. The numbers in each row progressively double from the previous number to the next as we go from left to right. This can be clearly seen in the numbers in the bottom row, where 48 becomes 96 and 96 becomes 192.

Thus, in the top row, 6 becomes 12 and 12 would become 24 (which is the missing number). Option (d) is the correct answer.

4. The order of figures keeps rotating between Square-Triangle-Circle-Square-Triangle-Circle and so on. Thus, if the first figure is a triangle, the next figure in the same row would be a circle followed by a square. Thus, the missing figure in the bottom row must be a triangle. The other part of the logic you need to use in this case is that of the three figures one is not shaded, while the other two are shaded. Amongst the two figures which are shaded one is shaded by lines inclined to the right and the other is shaded by lines inclined to the left. In the third row, since the circle has a shading with right inclination, the missing triangle would have left inclined shading.

The 6th figure gives us the required missing figure. Hence, option (b) is the correct answer.

5. The given exchanges can be best tested in the following manner by checking the options. We can see that option (b) fits the given description because of the following:

	A	B	C
Starting situation	39	21	12
A doubles numbers with others	6	42	24
B doubles numbers with others	12	12	48
C doubles numbers with others	24	24	24

Hence, option (b) is correct.

6. The first conclusion is a valid conclusion as it can be inferred that desktop publishing requires skills in reading, communication and mathematics.

The second option also looks close, but is incorrect because it concludes about ‘the majority of the new jobs’. The information provided in the basic question tells us nothing about the majority of new jobs—it just talks about ‘many of the new jobs’.

Concluding about majority based on many is one of the basic thought errors induced in such questions. Thus, option (b) though it looks close is not the correct answer.

Option (a) is the correct answer.

7. In order to solve something like this where we need to find out the conclusion that cannot be validly made, we need to test each conclusion for its validity.

The thinking about option (a) would proceed on the following lines:

The basic information in the question states that if crop protection products are not used, crop yields would drop by more than 50%. This means that if crop yields do not drop by more than 50%, it must be sure that crop protection products must have been used.

A parallel logic to explain this can be stated in the following manner:

If you do not study hard, you would fail in the exams. If you did not fail, it must be true that you did study hard. Thus, conclusion (a) is a valid conclusion.

However, carrying this logic forward to option (d), it is clear that the conclusion drawn in option (d) is incorrect.

Again the parallel analogy is: If you do not study hard, you will fail in the exams. In case, you failed in the exams, it is not necessarily true that you did not study hard.

The conclusions in options (b) and (c) can be seen to be true.

Hence, option (d) is the correct answer.

8. The conclusion drawn by Lou in this case is erroneous as his argument is based on the following fallacy:

If A happens, B will happen. (Here A = flight is cancelled, B = Manager does not arrive in time).

Lou is concluding that A did not happen, hence B also will not happen. He is overlooking the possibility that the manager could still be late even if his flight is on time. Hence, Lou’s argument is fallacious.

However, even Evelyn’s argument is also half baked—just because Lou is stating the manager

would be on time, she is in effect saying that since Lou's argument is fallacious, the opposite result (i.e. the manager would be late) is definite.

Thus, Evelyn is right about Lou's argument, but her own conclusion is also unwarranted.

Thus, option (b) is the correct answer.

9. Clearly, if we know that the number of car accidents is much higher than the number of plane accidents, the argument gets weakened. Option (b) tells us exactly that.

Hence, Option (b) is correct.

Solutions for Questions 10 to 12:

10. From the figure it can be seen that the only input to S is from industry B. Thus, only industry E contributes to company S.

Option (d) is correct.

11. Industry B processes some elements from elements 4, 5 and 6. However, we do not know the split of these elements (as to how these elements are split between industries A, B and C) so we cannot determine the percentage of the total production of the listed elements that goes to Industry B. Thus, option (d) is correct.

12. The production of industry A goes only to P, Q and R. Since P, Q and R account for 45% of the total production (and they do not get any inputs either from Industry B or Industry C), we can say that Industry A accounts for 45% of the total production = 45000 tons.

Option (b) is correct.

13. **Ascend** : Increase :: Descend : **Decrease** shows the same relationship across the two pairs. Option (b) is correct.

14. Modern : **Ancient** :: Young : Old shows the same relationship across the two pairs. Option (a) is correct.

15. Part : **Whole** :: Class : **School** shows the same relationship across the two pairs. Option (b) is correct.

16. Summit : Apex :: **Beautiful** : **Pretty** shows the same relationship across the two pairs. Option (a) is correct.

17. Looking at BEAUTIFUL = 573041208 and BUTTER = 504479, one realises that the coding for this question is direct, i.e. the digit code in the code for the word is in the exact same place of the letter it is replacing. This can be seen if we look at B = 5 and T = 4 in the two words.

Thus, for future we realise that F = 2, U = 0, T = 4, R = 9 and E = 7 and hence the code for FUTURE = 204097. Option (b) is correct.

18. The number of Mondays in a month having 31 days and ending on Wednesday would be 5, as the Mondays would fall on the 1st, 8th, 15th, 22nd and 29th of the month.

However, if the month has lower than 31 days the number of Mondays if the month ends on a Wednesday would just be 4.

For example for a 30 day month, the 30th being a Wednesday, the last Monday would be on 28th. Consequently, the Mondays of the month would fall on 7th, 14th, 21st and 28th—a total of 4 Mondays only.

Since, the question does not specify the number of days in the month, we can be sure that we

do not have enough data to specify the exact number of Mondays in the month. Option (d) is correct.

19. In the first row, the middle number is got by: $17n = 12m = 102$. In this case, $n = 6$ and $m = 8.5$.
In the second row if we use: $15 \div 5 = 10 \div 7.5 = 75$ we get the required value of the number. It can be seen that both the multipliers reduce by 1.

Option (b) is correct.

20. The logic for the middle number in the first row being 336 is $12 \div 14 \div 2 = 336$.

In the second row, on the basis of the same logic, the missing number would be $15 \div 16 \div 2 = 480$.

Solutions for Questions 21 and 22:

In order to solve this set of questions, once you read the basic information you should realise that the two clues that give you a handle in order to move your thinking forward in this question are the clues (I) and (III). These state:

A and E have to be together AND

G cannot be with B or C which means that B and C have to be put in one boat and G on the other.

With this basic precondition in place we can look at the following situation:

One boat	Other Boat
B,C	G

Now the second clue states that F cannot be on the same boat as C unless we put D also in the same boat.

This leads to the following possibilities:

POSSIBILITY 1: If F is put with C $\wedge$ D would need to be with F.

One boat	Other Boat
B,C,F,D	G,A,E

POSSIBILITY 2: If F is not put on the boat with C.

One boat	Other Boat
B,C	G,F

This leaves us with A, E and D to place

From this point we get the following situations:

POSSIBILITY 2A:

One boat	Other Boat

B,C,A,E	G,F,D

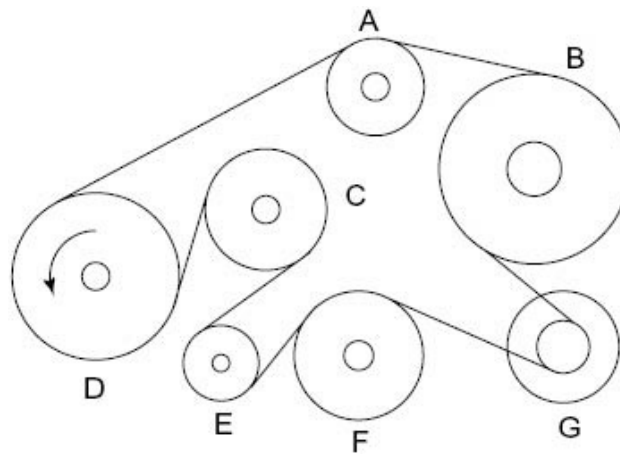
POSSIBILITY 2 B:

One boat	Other Boat
B,C,D	G,F,A,E

From this point we can move into the questions by looking at the individual situations as led into by the question.

21. If F and B are on one boat as stated by this option, it means we are looking at possibility 1.
In such a case the arrangement involves putting G on the other boat. Option (a) is correct.
22. If E and F are together, it necessarily means that we are looking at Possibility 2B. In this case the other boat would have B, C and D on it.
23. In each figure as we move from the left to the right we are deleting one horizontal and one vertical line. Thus the final figure in place of the question mark would have just one vertical line. Option (c) is correct.
24. From the first figure to the next, the dots remain in the same place and the lines are inverted. The same relationship would exist between the third and the fourth figure. In option (c), the dots remain in their place (as in the third figure) and the lines are inverted.
Thus, option (c) is the correct answer.
25. There are four parallel series running in the given series.
The series of letters in the first place: G, I, KÆ hence M (skip 1 letter to get the next letter in the series).
The series of letters in the second place: M, O, QÆ hence S (skip 1 letter to get the next letter in the series).
At this point if we look at the options we realise that there are only two options, which give us a start of MS. Thus, we have to choose between options (a) and (d). Further, both these options give us Y as the third letter. Hence, we just need to focus on deciding on the last letter.
The series of letters in the fourth place: Y, A, C Æ hence E (skip 1 letter to get the next letter in the series).
Option (a) is correct.

1. A band passes around all the wheels so that they can be turned by the driving wheel when the driving wheel turns in the direction shown. Which way will wheel B turn?
- (a) Clockwise (b) Cannot move
- (c) Anticlockwise (d) Either way



2. In a certain language, (A) ‘Sun shines brightly’ is written ‘ba lo sul’; (B) ‘Houses are brightly lit’ is written as ‘kado udo ari ba’; and (C) ‘Light comes from sun’ as ‘dapi kup lo nro’. What words will be written for ‘sun’ and ‘brightly’?
- (a) Lo, ba (b) ba, lo
(c) sul, lo (d) ba, sul
3. Given are the following three equations:

1.   = 
2.  =  
3.   =   

How many circles are equivalent to a square, as per the ratios in the three given equations?

- (a)  =     
- (b)  =    
- (c)  =   
- (d)  =  

4. Each child in a family has at least 4 brothers and 3 sisters. What is the smallest number of children the family might have?
 - (a) 7
 - (b) 8
 - (c) 9
 - (d) 10
5. In the following question two statements are followed by two conclusions numbered I and II. Assume the two statements are true even if they are at variance with commonly known facts. Then pick the correct answer from the choices given below.
 - (A) Only conclusion I follows.
 - (B) Only conclusion II follows.
 - (C) Both conclusions I & II follow.
 - (D) Neither conclusion I nor conclusion II follows.

Statements: Some doctors are fools. Joshi is a doctor.

Conclusions: I. Joshi is a fool.

II. Some fools are doctors.

 - (a) A
 - (b) B
 - (c) C
 - (d) D
6. Debu walks towards the east then towards North and turning 135° right walks for a while and lastly turns towards left. In which direction is he walking now?
 - (a) North
 - (b) East
 - (c) South-East
 - (d) North-East

Directions for Questions 7 to 9: Read the following instructions and answer.

- I. There is a rectangular wooden block of length 4 cm, height 3 cm and breadth 3 cm.
- II. The two opposite surfaces of $4\text{ cm} \times 3\text{ cm}$ are painted yellow on the outside
- III. The other two opposite surfaces of $4\text{ cm} \times 3\text{ cm}$ are painted red on the outside.
- IV. The remaining two surfaces of $3\text{ cm} \times 3\text{ cm}$ are painted green on the outside.
- V. Now, the block is cut in such a way that cubes of $1\text{ cm} \times 1\text{ cm} \times 1\text{ cm}$ are created.

7. How many cubes will have only one colour?
- (a) 10 (b) 12
(c) 14 (d) 18
8. How many cubes will have no colour?
- (a) 1 (b) 2
(c) 4 (d) 8
9. How many cubes will have any two colours?
- (a) 34 (b) 24
(c) 16 (d) 12
10. Read the following about the grid given below and answer.

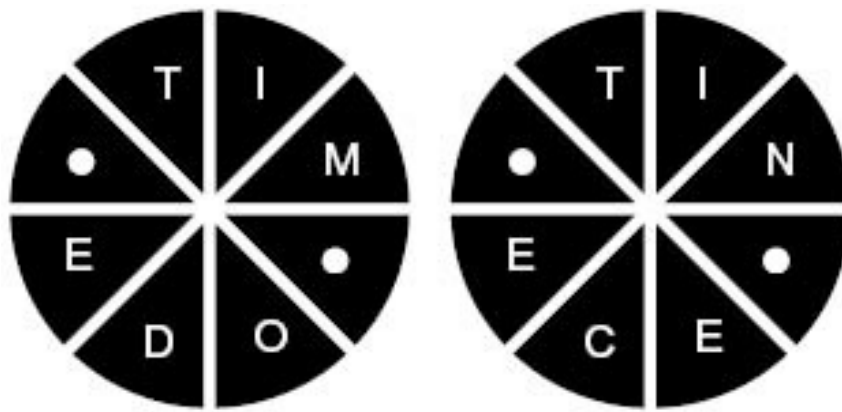
- Σ The cells in this grid contain the digits 1 to 9 in random order.
- Σ Column A contains no odd digits.
- Σ Cell C3 minus Cell C2 equals 4.
- Σ The sum of three digits in Row 1 is 17.
- Σ Number 7 is in Column B; its left hand neighbour is not 4.
- Σ The digits of Column C add upto 14.
- Σ 2 is not in the same horizontal row as 8; and 9 is not immediately below 3.

Which cell holds the number 9?

- (a) B1 (b) B3
(c) C2 (d) C1

	A	B	C
1			
2			
3			

11. Replace the question mark with the right option.
4, 32, 288, ?, 31680
- (a) 25600 (b) 2880
(c) 7420 (d) 10000
12. In the Sunday bazaar, Jamuna sells her lemons at ` 0.50 for two. Her neighbour Seema has slightly smaller lemons; she sells hers at ` 0.50 for three. After a while, when both ladies have the same number of lemons left, Seema is called away. She asks her neighbour to take care of her goods. To make things simple, Jamuna puts all lemons in one big pile, and starts selling five lemons per one rupee. When Seema returns, at the end of the day, all lemons have been sold. But when they start dividing the money, there appears to be a shortage of ` 3.50. Supposing they divide the money equally, how much does Jamuna lose in this deal?
- (a) ` 10.50 (b) ` 11.50
(c) ` 42.00 (d) ` 52.50
13. There are two cups, one containing orange juice and one containing an equal amount of lemonade. One teaspoon of the orange juice is taken and mixed with the lemonade. Then a teaspoon of this mixture is mixed back into the orange juice. Is there more lemonade in the orange juice or more orange juice in the lemonade?
- (a) More orange juice in the lemonade
(b) More lemonade in the orange juice
(c) Equal amount of each juice between the two cups
(d) None of the above
14. Consider the statement and decide which of the assumptions are implicit.
“In the present period of economic hardships, education and small family norm may lead the nation to progress and prosperity”?
- Assumptions: A. Education and small family norms are directly related to nation’s progress.
B. Big families find it difficult to bear the cost of education.
- (a) Only A is implicit.
(b) Only B is implicit.
(c) Both A and B are implicit.
(d) Neither A nor B is implicit.
15. Fill in the blanks to find out two words that are synonyms.
- (a) KS, ST (b) MS, NT
(c) ST, DN (d) MS, DN



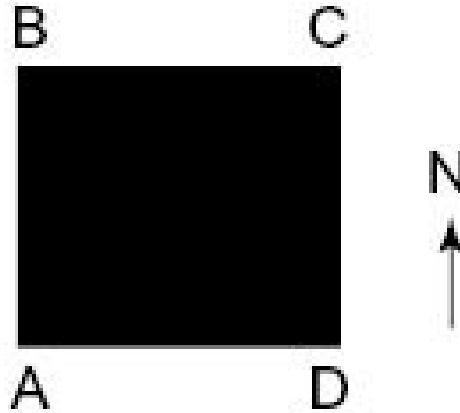
16. Beautiful beaches attract people, no doubt about that. Just look at the city's most beautiful beaches, which are amongst the most overcrowded places in the state.

Which of the following exhibits a pattern of reasoning similar to the one exhibited in the argument above?

- (a) Moose and bear usually appear at the same drinking hole at the same time of the day. Therefore, moose and bear must be feeling thirsty at about the same time.
 - (b) Children who are scolded severely tend to misbehave more often than other children. Hence if a child is not scolded severely, that child is less likely to misbehave.
 - (c) During warm weather my dog suffers more fleas than during cool weather. Therefore, fleas must thrive in a warm environment.
 - (d) Tally accounting software helps increase the work efficiency of its users. As a result, these users have more time for other activities.
17. Abdul, Mala and Chetan went bird watching. Each of them saw one bird that none of the others did. Each pair saw one bird that the third did not. And one bird was seen by all three. Of the birds Abdul saw, two were yellow. Of the birds Mala saw, three were yellow. Of the birds Chetan saw, four were yellow. How many yellow birds were seen in all? How many non-yellow birds were seen in all?
- (a) 7 yellow birds and 3 non-yellow birds
 - (b) 5 yellow birds and 2 non-yellow birds
 - (c) 4 yellow birds and 2 non-yellow birds
 - (d) 3 yellow birds and 2 non-yellow birds
18. In each of the following two sets I & II, find the word or pair of words different from the other three words or pair of words:
- I: J. Lake K. Brook L. Stream M. River
- II: J. Weighty-Heavy K. Broad-Wide L. Big-Large M. Tiny-Small
- (a) I-J, II-J
 - (b) I-K, II-M
 - (c) I-K, II-J
 - (d) I-J, II-K
19. A, B, C and D are standing on the four corners of a square field as shown in the figure. From the positions shown in the figure, A walks to North position and B walks to the East position

while C decides to walk two sides in anticlockwise direction. B walks to the South and then changes his mind to take the previous position. Identify the choice with correct positions.

- (a) A & B occupy the same position.
- (b) C & D occupy the same position.
- (c) D & B are in their original positions.
- (d) B & C occupy diagonally opposite positions.



20. A gambler bet on a horse race, but the bookie wouldn't tell him the results of the race. The bookie gave clues as to how the five horses finished, which may have included some ties, and wouldn't pay the gambler off unless the gambler could determine how the five horses finished based on the following clues:

- Σ Penn Fe finished before Night Marvel and after Wish Bones.
- Σ Wish Bones tied with Penn Fe if and only if Hallelujah did not tie with Sundae.
- Σ Penn Fe finished as many places after Sundae as Sundae finished after Wish Bones if and only if Wish Bones finished before Night Marvel.

The gambler thought for a moment, then answered correctly. How did the five horses finish the race?

- (a) Sundae came in first. Wish Bones and Hallelujah tied for second place. Penn Fe came fourth. Night Marvel came in fifth.
 - (b) Wish Bones came in first. Sundae and Penn Fe tied for second place. Hallelujah came in fourth. Night Marvel came in fifth.
 - (c) Wish Bones came in first. Sundae and Hallelujah tied for second place. Penn Fe came in fourth. Night Marvel came in fifth.
 - (d) Penn Fe came in first. Night Marvel and Hallelujah tied for second place. Wish Bones came in fourth. Sundae came in fifth.
21. In a school drill, a number of children are asked to stand in a circle. They are evenly spaced and the 6th child is diametrically opposite the 16th child. How many children are made to stand in the circle?

- (a) 16
- (b) 20

(c) 22

(d) None of the above

22. In this number grid insert the missing number at the sign of interrogation.

(a) 62

(b) 72

(c) 60

(d) 70

8	4	9	5
5	7	3	4
3	4	5	8
39	44	60	?

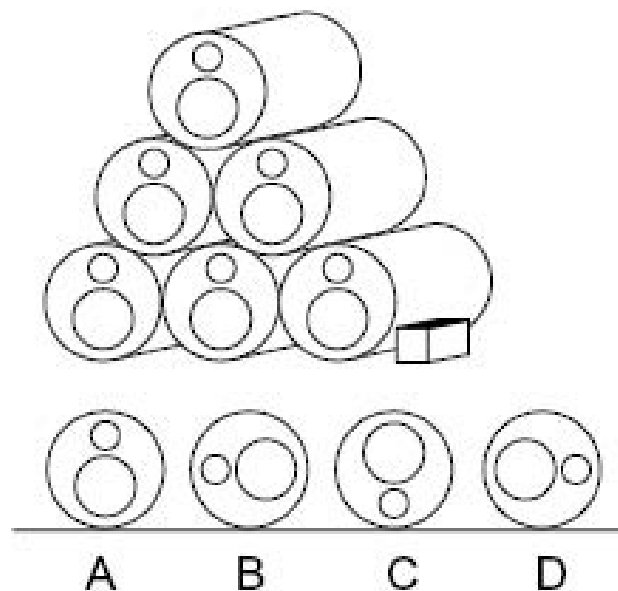
23. Steel cylinders are made so that each one has a large and small hole through the middle. In the drawing six cylinders have been stacked on top of each other. To stop the cylinders from rolling on the smooth floor they are wedged by heavy blocks at each side of bottom row. If the heavy blocks are removed what would be the position of the cylinder when they stopped rolling?

(a) A

(b) B

(c) C

(d) D



Directions for Questions 24 to 26: Use the information given below to answer.

- There is a group of 5 persons A, B, C, D and E.
- In the group there is one badminton player, one chess player and one tennis player.
- A and D are unmarried ladies and they do not play any games.
- No lady is a chess player or a badminton player.
- There is a married couple in the group of which E is the husband.
- B is the brother of C and is neither a chess player nor a tennis player.

24. Which of the groups has only ladies?
(a) ABC (b) BCD
(c) CDE (d) None of the above

25. Who is the tennis player?
(a) B (b) C
(c) D (d) E

26. Who is the wife of E?
(a) A (b) B
(c) D (d) None of the above

27. Consider the following statements and answer the question.

M, N, O and P are all different individuals.

M is the daughter of N.

N is the son of O.

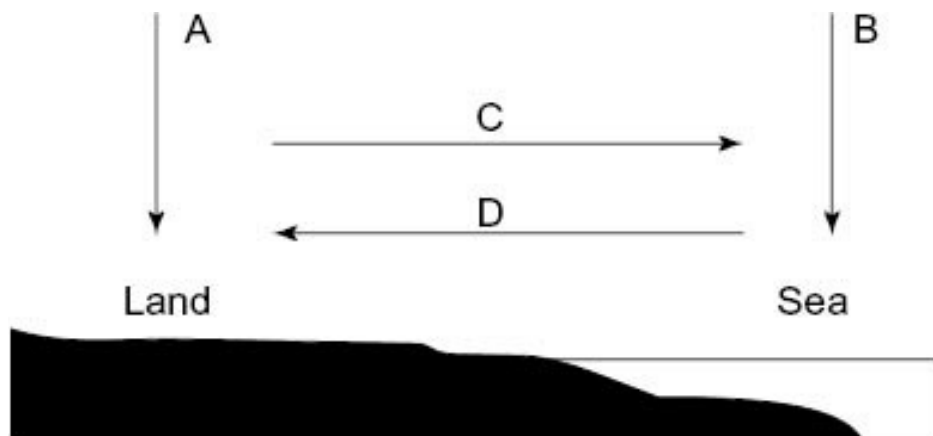
O is the father of P.

Which among the following statements is contradictory to the above premises?

- (a) P is the father of M.
(b) O has three children.
(c) M has one brother.
(d) M is the grand daughter of O.

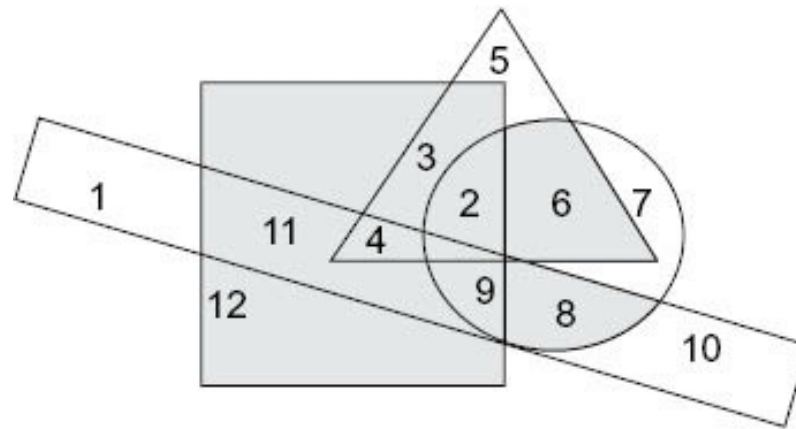
28. The drawing shows a cross section where the land meets the sea. The section covered is 5 kilometers. On a hot day, in which direction, indicated by four arrows, is the wind most likely to blow?

- (a) A (b) B
(c) C (d) D



Directions for Questions 29 and 30: In the diagram below, the circle stands for ‘educated’, square stands for ‘hard working’, triangle for ‘urban people’ and rectangle for ‘honest’. The different regions

of the diagram are numbered from 1 to 12. Study the diagram carefully and answer the questions:



29. Uneducated urban hard-working and honest people are indicated by:

- (a) 3 (b) 11
(c) 9 (d) 4

30. Non-urban educated people who are neither hard-working nor honest are indicated by:

- (a) 5 (b) 7
(c) 10 (d) 11

Answer Key

1. (b)	2. (a)	3. (a)	4. (c)
5. (b)	6. (d)	7. (a)	8. (b)
9. (c)	10. (b)	11. (b)	12. (a)
13. (c)	14. (a)	15. (d)	16. (c)
17. (b)	18. (a)	19. (d)	20. (c)
21. (b)	22. (b)	23. (c)	24. (d)
25. (b)	26. (d)	27. (a)	28. (c)
29. (d)	30. (b)		

Solutions:

1. If you look at the chain of forces that the pulley at D puts on the wheel B, there are two forces happening.

Through the wheel A, the wheel D is pulling wheel B in an anticlockwise manner. However, through the network of wheels C,E,F,G, the wheel D is pulling the wheel B in a clockwise fashion.

Also, since both the forces originate from wheel D, the clockwise and anticlockwise forces on B would be equal. Thus, the wheel would not move.

Hence, option (b) is correct.

2. Sun Shines brightly = ba lo sul

Houses are brightly lit = kado udo ari ba

Light comes from sun = dapi kup lo nro.

From the first and second statements, we can see that the common word in the original phrases is 'brightly' and the common word in the codes is 'ba'.

Thus, we can conclude that brightly means 'ba' in the language.

From the first and third statements, we can see that the common word in the original phrases is 'sun' and the common word in the codes is 'lo'.

Thus, we can conclude that 'sun' means 'lo' in the language.

Thus, option (a) is correct.

3. This question has to be solved using the options to confirm how many circles would a square represent so that all the three equations provided to us are consistent with each other, i.e. there is internal consistency between the three equations.

Checking option (a) we get: One Square = 5 circles.

Putting this value in equation 1: we get: 6 circles = 1 triangle.

Thus, equation 3 which shows two triangles on the LHS, would become 12 circles on the LHS and that would be equivalent to 3 diamonds. Thus, 1 diamond would be equal to 4 circles.

Putting this value in equation 2 we can see that one square would be equal to 5 circles. Hence, there is internal consistency between the three equations if one square is equivalent to 5 circles.

If you check in the same way for the other options, you will see that they would fail the internal consistency check. The equations would not match each other.

For instance, if we check option (d) we get:

One square = 2 circles.

Putting this value in equation 1: we get: 3 circles = 1 triangle.

Thus, equation 3, which shows two triangles on the LHS, would become 6 circles on the LHS and that would be equivalent to 3 diamonds. Thus, 1 diamond would be equal to 2 circles.

Putting this value in equation 2 we can see that one square would be equal to 3 circles. But we started from 1 square = 2 circles. Hence, internal consistency between the equations is not achieved. Option (d) can be rejected.

Checking option (b): One Square = 4 circles.

Putting this value in equation 1, we get: 5 circles = 1 triangle.

Thus, equation 3, which shows two triangles on the LHS, would become 10 circles on the LHS and that would be equivalent to 3 diamonds. Thus, 1 diamond would be equal to 3.33 circles.

Putting this value in equation 2 we can see that one square would be equal to 4.33 circles.

But we started from 1 square = 4 circles. Hence, internal consistency between the equations is not achieved. Option (b) can be rejected.

Checking option (c): One Square = 3 circles.

Putting this value in equation 1: we get: 4 circles = 1 triangle.

Thus, equation 3, which shows two triangles on the LHS, would become 8 circles on the LHS and that would be equivalent to 3 diamonds. Thus, 1 diamond would be equal to 2.66 circles.

Putting this value in equation 2 we can see that one square would be equal to 3.66 circles.

But we started from 1 square = 3 circles. Hence, internal consistency between the equations is not achieved. Option (c) can be rejected.

Thus, option (a) is correct.

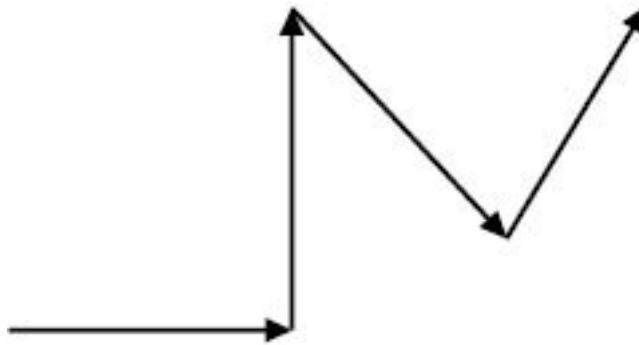
4. If the child is a boy, he needs to have at least 4 brothers, means that there are at least 5 boys in the family. By the same reasoning, if the child is a girl, she needs to have at least 3 sisters. This means that there must be at least 4 girls in the family.

The minimum number of children the family might have is 5 boys + 4 girls = 9 children. Option (c) is correct.

5. Only conclusion II follows in this case as if some doctors are fools is true it must be true that some fools are doctors. Joshi is a fool is something that is not necessarily true because if he is a doctor, he might or might not belong to the group of doctors who are fools.

Thus, option (b) is correct.

6. Debu's movements can be tracked as follows:

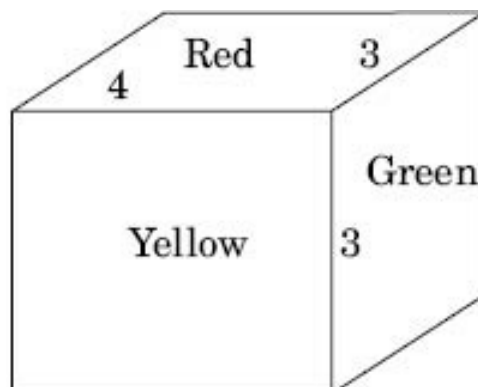


From the figure it is clear that Debu is finally walking towards the North East.

Option (d) is correct.

Solutions for Questions 7 to 9:

The following figure would help you visualise the cube and its painting.



From this visualisation we can visualise the individual surfaces:

The 4×3 surfaces would look something like the table below:

Three colors	Two colors	Two colors	Three colors
Two colors	Single Color	Single Color	Two colors
Three colors	Two colors	Two colors	Three colors

We also know that there would be 4 of them.

Similarly, the 3×3 surfaces would look something like below and there would be two of them:

Three colors	Two colors	Three colors
Two colors	Single Color	Two colors
Three colors	Two colors	Three colors

7. From the above visualisations of the surfaces, it is clear that there would be:

$$2 \times 4 + 1 \times 2 = 10 \text{ cubes with one side painted only.}$$

Option (a) is correct.

8. If you look at the front layer of the original cube, there are three such layers. The front layer (where the front is painted yellow); the middle layer and the back layer.

If the frontal 4×3 layer were to be removed the next layer would have two cubes, which have no color:

	No Color	No Color	

Thus, there would be two cubes with no color

Option (b) is correct.

9. In order to visualise the cubes having two colors we can do so by using:

$$\text{All cubes} - \text{cubes having 3 colors} - \text{cubes having 1 color} - \text{cubes having no color} = 36 - 8 - 10 - 2 = 16.$$

Option (c) is correct.

10. The digits available are 1, 2, 3, 4, 5, 6, 7, 8 and 9. This list has 4 even numbers and 5 odd numbers.

Deduction 1 from clue 2: When we know that column A has no odd numbers, we also know that three of the even numbers from 2/4/6 and 8 have to take the places in column A.

Deduction 2: $C3 - C2 = 4$ means that both C3 and C2 contain odd numbers and the pair of numbers they might contain might be:

Possibility 1: 9, 5; Possibility 2: 7, 3; Possibility 3: 5, 1

Reading further we know that 7 is in Column B, so we reject the Possibility 2 above and the remaining possibilities for C3 and C2 are 9, 5 and 5,1 respectively.

If you combine this information with the fact that Column C adds up to 14, we see that the 9, 5 possibility for Column C does not exist. Thus, the three numbers in the order C1, C2, C3 for Column C are: 8, 5, 1

This also then means that the digits in the first column (A) are 2, 4 and 6, but not necessarily in that order.

With these deductions the grid would become:

	A (2, 4, 6)	B (3, 7, 9)	C
1			8
2			5
3			1

Now since we know that the sum of digits in Row 1 is 17, we can definitely conclude that 9 would not be in the first row of Column B. Further, the digit 2 is not in the same row as 8. The grid would become:

	A (2, 4)	B (7, 9)	C
1	6	3	8
2			5
3			1

Now since 9, is not immediately below 3, 9 would necessarily take the B3 cell.

Option (b) is the correct answer.

11. The logic of the series is $4, 4 \times 8 = 32, 32 \times 9 = 288, 288 \times 10 = 2880, 2880 \times 11 = 31680$.

Thus, the missing number is 2880.

Option (b) is correct.

12. The key to the start of the thinking of this question is that the same number of lemons are left at the point of time when Seema is called away.

In order to understand the mathematical situation, suppose we assume that there were 30 lemons left with both women at this point of time.

If they sold the lemons at their original rates, Jamuna would earn ` 7.5 while Seema would have earned ` 5. A total realization of ` 12.5

By selling the 60 lemons @ 5 lemons per rupee, the net realization for both would be ` 12.

This would mean a loss of ` 0.5.

Since, the loss is ` 3.5, it means that the number of lemons should be 7 times for both people.

Thus, they have 210 lemons each.

Total realization = ` 84. If the money is split half way, Jamuna would have earned ` 42.

Jamuna's realization on her own would be $= 7.5 \times 7 = 52.5$

Thus, Jamuna ends up losing ` 10.5.

Option (a) is correct.

13. There would be equal amount of each juice in each cup and this can be experimentally verified. If you were to suppose there were 100 ml in each cup to begin with and let's say we are transferring 10 ml from one cup to the other and back.

Situation	Orange juice & lemonade in first cup	Orange Juice and Lemonade in second cup	Description of transfer
Original	100,0	0,100	
First transfer	90,0	10,100	10 ml of orange juice is transferred from the first cup to the second
Second transfer	$90 + 10 \times \frac{10}{110} = 90.90$, $10 \times \frac{100}{110} = 9.09$	$10 - 10 \times \frac{10}{110}$, $100 - 10 \times \frac{100}{110} \approx 9.09$, 90.90	10 ml of the mixture in the second is transferred back to the first cup

Thus, option (c) is correct.

14. Only A is an implicit assumption as the statement directly connects education and small family norm to the nation's progress. Option (a) is correct.
15. The two words are Indecent and Immodest. Thus, MS should fill the blanks of the first figure and DN should fill the second figure. Option (d) is correct.
16. The argument in the question is based on the premise that just because the city's beaches are the most overcrowded in the state, so it must be true that beautiful beaches attract people. The reasoning is akin to making a generic conclusion about something based on one observation. Similar reasoning is shown by option (c) because it uses a similar kind of logic to make a conclusion. On one fact, the whole conclusion is based, viz: just because my dog suffers more fleas during hot weather, it follows that fleas must thrive in a warm environment. Option (c) is correct.
17. This can be put into a grid as follows and in fact becomes much easier to execute inside a grid:

Let us say we take 10 birds to start with and we try to see how many are required at the minimum to fulfill all conditions:

Let the birds be A,B,C,D,E,F,G,H,I and J. If we meet all of Abdul's requirements, the table would look as below.

A (yellow)	B (non-yellow)	C	D	E (non-Yellow)	F (yellow)	G	H	I	J
All three	Abdul alone	Mala alone	Chetan alone	Abdul and Mala	Abdul and Chetan	Mala and Chetan			

From this point we need to think of how Mala's constraints can be met. If we think of C and G as yellow birds, we will get Mala having seen 3 yellow birds (A, C and G). Besides, at this stage we have also taken care of Abdul's constraints. The table would look as below.

A (yellow)	B (non-yellow)	C (yellow)	D	E (non-Yellow)	F(yellow)	G (yellow)	H	I	J

All three	Abdul alone	Mala alone	Chetan alone	Abdul and Mala	Abdul and Chetan	Mala and Chetan			

Into this scheme of things, if we now try to put Chetan’s constraints into the table we have that since Chetan has seen at least 4 yellow birds, bird D can be put as yellow. In such a case the grid would look as below:

A (yellow)	B (non-yellow)	C (yellow)	D (Yellow)	E (non-Yellow)	F(yellow)	G (yellow)	H	I	J
All three	Abdul alone	Mala alone	Chetan alone	Abdul and Mala	Abdul and Chetan	Mala and Chetan			

This situation meets all the constraints in the problem. Birds H, I and J are not required to be considered.

There are 5 yellow birds and 2 non-yellow birds.

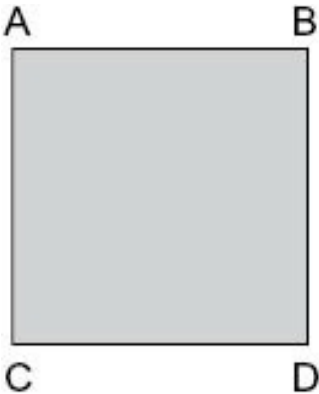
Option (b) is correct.

18. A lake is still water, the others are names of flowing water bodies.

In the second list Weighty-Heavy is the odd pair between the options we have of broad-wide versus weighty-heavy.

Option (a) is correct.

19. The final arrangement after the walks would be as shown below:



It can be clearly seen that B and C are diagonally opposite. Option (d) is correct.

20. The correct order that satisfies all conditions can be checked from the options.

Option (a) is incorrect because it contradicts the clue “Penn Fe finished as many places after Sundae as Sundae finished after Wish Bones” which has to be true because then “Wish Bones finish before Night Marvel”.

Option (b) is incorrect, because it contradicts the same clue, i.e. “Penn Fe finished as many places after Sundae as Sundae finished after Wish Bones” which has to be true because then “Wish Bones finished before Night Marvel”.

Option (d) is also wrong because in that option, Penn Fe finishes before Wish Bones—which contradicts the first clue that Penn Fe finishes after Wish Bones.

Option (c) is correct as it satisfies all the conditions.

21. If the 6th and the 16th are diametrically opposite, it means that between them on one side there would be 7, 8, 9, 10, 11, 12, 13, 14 and 15, which means there are 9 people on either side.

Thus, the total number of people is 20.

22. The logic for each column is fixed: So the first column has 39 at the bottom because $(8 + 5) \times 3 = 39$.

Similarly, in the second column we have: $(4 + 7) \times 4 = 44$.

In the third column we have: $(9 + 3) \times 5 = 60$.

In the fourth column we would get: $(5 + 4) \times 8 = 72$.

Option (b) is correct.

23. You have to visualise the rotation of each cylinder when the cylinders on top push the cylinders below to the sides. Each cylinder would roll by 180° and hence, option (c) is correct.

Solutions for Questions 24 to 26:

The following chain of deductions would give us the solution to this question set.

Starting grid:

Name	Male/Female	Relationship Status	Game Played
A			
B			
C			
D			
E			

A and D being unmarried ladies who do not play any game, can be put into the grid as follows:

Name	Male/Female	Relationship Status	Game Played
A	Female	Unmarried	None
B			B/C/T
C			B/C/T
D	Female	Unmarried	None
E			B/C/T

Note: In the above we have concluded that B, C and E have to each play a game as A and D are not playing any game means that the other three people must be playing a game each.

At this point if we use the information given in clues (v) and (vi) we realise that E and B are males and since there is a married couple in the group there has to be a married lady and that must be C. Also since no lady plays chess or badminton it follows that C must play Tennis. The grid changes to:

Name	Male/Female	Relationship Status	Game Played
A	Female	Unmarried	None
B	Male	Brother of C	B/C
C	Female	Wife of E	Tennis
D	Female	Unmarried	None
E	Male	Husband of C	C/B

Further, since we know that B is not a chess player, he must be a badminton player. The final pieces fall into place inside the grid.

Name	Male/Female	Relationship Status	Game Played
A	Female	Unmarried	None
B	Male	Brother of C	Badminton
C	Female	Wife of E	Tennis
D	Female	Unmarried	None
E	Male	Husband of C	Chess

The answers to the questions can now be read off the above grid.

24. ACD is the group of ladies. Option (d) is correct.
25. C is the tennis player. Option (b) is correct.
26. C is the wife of E. Option (d) is correct.
27. The family tree would look like:

Generation	People	Defined Relationships
First generation	O (male)	O is father of N and P, M is granddaughter of O.
Second generation	P (sex unknown), N (Male)	N is father of M and son of O. Also, N is brother of P.
Third generation	M (female)	M is granddaughter of O and daughter of N.

Based on this tree:

- Option (a): P is the father of M, contradicts the given premises.
- Option (b): O has three children can happen as there could be one more sibling for N and P. Thus, option (b) does not contradict the premises.
- Option (c): Again, this can happen and hence this option does not contradict the premises.
- Option (d): is definitely true and does not contradict the premises.
- Thus, the statement in option (a) contradicts the premises.
- Option (a) is the correct answer.

28. On a hot day wind would flow from land to sea. Option (c) is correct.

Solutions for Questions 29 and 30:

29. The required area we are looking for should be outside the circle (for 'uneducated') but inside the triangle (urban), inside the square (hard working) and inside the diagonal rectangle (honest). Area represented by the digit 4 satisfies this condition.

Option (d) is the correct answer.

30. Non-urban (outside the urban triangle); educated (inside the educated circle); not hard-working (outside the square) and not honest (outside the diagonal rectangle). Area 7 is outside the triangle, the square and the rectangle but inside the circle.

Hence, option (b) is the correct answer.

SNAP 2007

1. You have three chests in front of you. The first chest is labeled “GOLD”, the second is labeled “SILVER” and the third is labeled “GOLD OR SILVER”. You have been told that all the labels are on the wrong chests and that one chest contains gold coins, one contains silver coins and one contains bronze coins. How many chests do you need to open to deduce which label goes on which chest?
 - (a) 0
 - (b) 1
 - (c) 2
 - (d) Cannot deduce
2. How many minutes before 12 noon is it when it is 27 minutes past 10 am?
 - (a) 30
 - (b) 93
 - (c) 49
 - (d) 94

Directions for Questions 3 to 5: Read the following passage and answer the questions.

An employee has been assigned the task of allotting offices to six of the staff members. The offices are numbered 1–6. The offices are arranged in a row and they are separated from each other by six foot high dividers. Hence voices, sounds and cigarette smoke flow easily from one office to another.

Miss Ruby needs to use the telephone quite often throughout the day. Mr. Minhas and Mr. Brar need adjacent offices as they need to consult each other often while working. Miss Harsha is a senior employee and has to be allotted the office number 5, having the biggest window.

Mr. Dongre requires silence in the offices next to his. Mr. Tanjore, Mr. Minhas and Mr. Dongre are all smokers. Miss Harsha finds tobacco smoke allergic and consequently the offices next to hers are to be occupied by non-smokers.

Unless specifically stated all the employees maintain an atmosphere of silence during office hours.

3. The ideal candidate to occupy the office furthest from Mr. Brar would be
- (a) Miss Harsha (b) Mr. Minhas
- (c) Mr. Tanjore (d) Mr. Dongre

4. The three employees who are smokers should be seated in the offices.
- (a) 1, 2 and 4 (b) 2, 3 and 6
(c) 1, 2 and 6 (d) 1, 2 and 3
5. In the event of what occurrence, within a period of one month since the assignment of the offices, would a request for a change in office be put forth by one or more employees?
- (a) Mr. Dongre quitting smoking
(b) The installation of a noisy teletype machine by Miss Harsha in her office.
(c) Miss Ruby needs silence in the office(s) next to her own.
(d) Mr. Tanjore taking over the duties formerly taken care of by Miss Ruby.
6. Shankar and Jwala are both members of a Youth club, though they do not speaking to each other and refuse to work with each other. Chaya, the club president, is appointing members to the fundraising committee, but she has resolved that she will not appoint anyone without his or her explicit consent. Shankar tells Chaya, "I will not consent to appointment on that committee unless I know whether Jwala is to be a member of it." And Jwala says, "I will not consent to be a member of that committee unless I know whether Shankar will be appointed to it."
- If all three of these people stick by these resolutions, then:
- (a) Neither of them can be appointed to the committee.
(b) They must either both be appointed or both be left out.
(c) The committee may finally have one of them, both of them, or neither of them as members.
(d) Either one of them can be appointed, but not both.
7. A bank customer had ` 100 in his account. He then made 6 withdrawals, totaling ` 100. He kept a record of these withdrawals, and the balance remaining in the account, as follows:

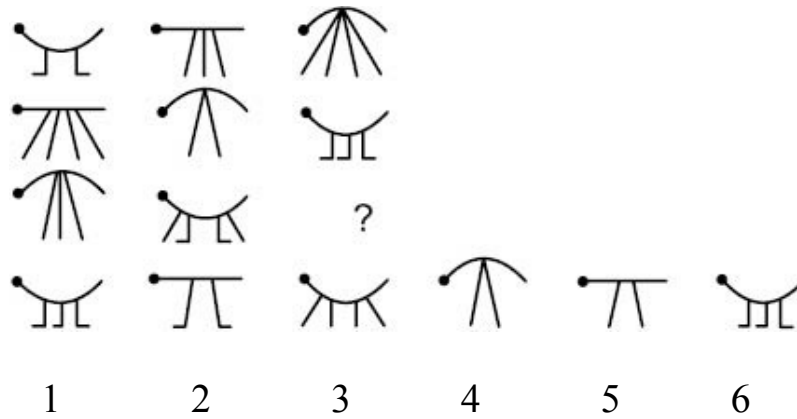
Withdrawals	Balance left
` 50	` 50
` 25	` 25
` 10	` 15
` 8	` 7
` 5	` 2
` 2	` 0
` 100	` 99

So, why are the totals not exactly right?

- (a) There is a mistake in the total of withdrawals.
(b) There is a mistake in the total of the balance.
(c) The two totals need not be equal.

(d) The bank has cheated the customer.

8. Which image from the bottom row should replace the question mark?



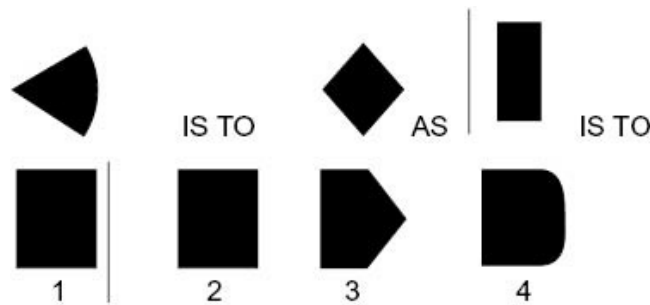
(a) 3

(b) 6

(c) 2

(d) 5

9.



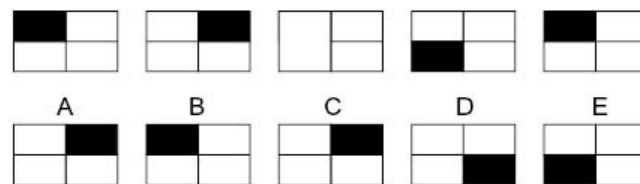
(a) 1

(b) 2

(c) 3

(d) 4

10. Which pattern from the bottom line (A, B, C, D or E) is missing from the top line?



(a) A

(b) B

(c) D

(d) E

Directions for Questions 11 to 13: These questions are based on the following information.

During their school Silver Jubilee Reunion, four alumni were discussing their starting annual salaries back in 1981. The salaries in question were Rupees 40, 50, 60 and 70 thousand per year. Of course the present MD of a private company earned the most. Arvind earned more than Biswajeet, and the doctor earned more than Dhruv the engineer. Chinmay could not remember what he started on. Biswajeet the lawyer did not start on ` 50,000, nor did Dhruv.

11. What is Chinmay's current profession?

(a) MD

(c) Doctor

(b) Lawyer

(d) Engineer

12. What was the Lawyer's starting salary?

(a) 40,000

(c) 60,000

(b) 50,000

(d) 70,000

13. Who received the highest starting salary?

(a) Arvind

(c) Chinmay

(b) Biswajeet

(d) Dhruv

14. A man has a job which requires him to work 8 straight days and rest on the ninth day. If he started work on a Monday, the 12th time he rests will be on what day of the week?

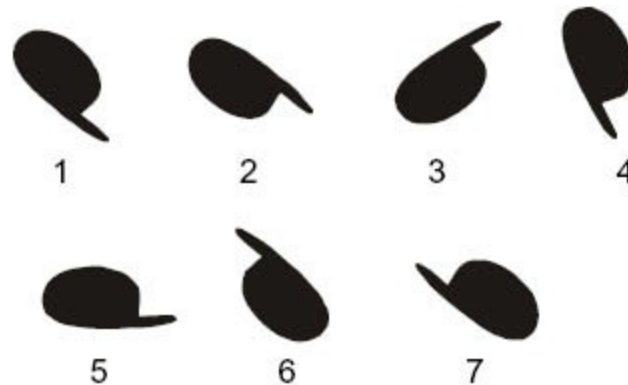
(a) Sunday

(c) Tuesday

(b) Wednesday

(d) Friday

15. From the images below (1-7) find 3 odd ones out.



(a) 1, 2, 3

(c) 3, 7, 4

(b) 2, 3, 7

(d) 4, 1, 6

16. Babloo and Bunty were excitedly describing the result of the First Annual Running Race at Damapur High School. Snehal, Tanmay and Waman had been the three contestants. "Tanmay won the race; Waman was in second place," reported Babloo. Bunty disagreed. "It was Snehal who won. Tanmay came second."

In fact, neither Babloo nor Bunty had given a correct version of the result as each had made one true and one false statement.

What was the actual placing of the three contestants?

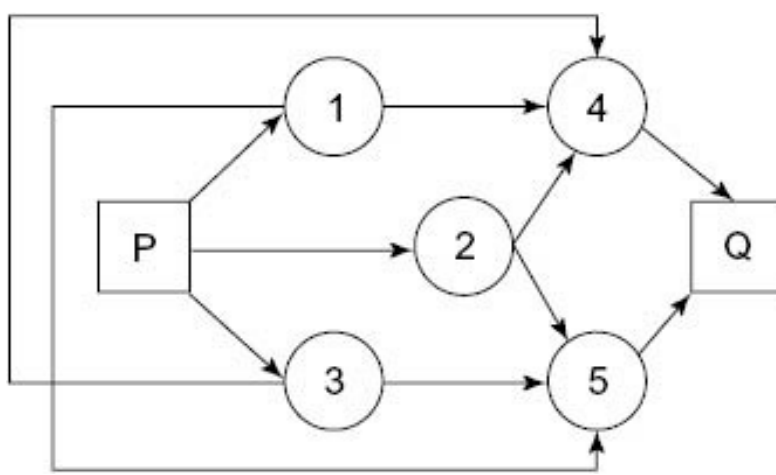
(a) Snehal, Waman, Tanmay.

(b) Snehal, Tanmay, Waman.

(c) Waman, Snehal, Tanmay.

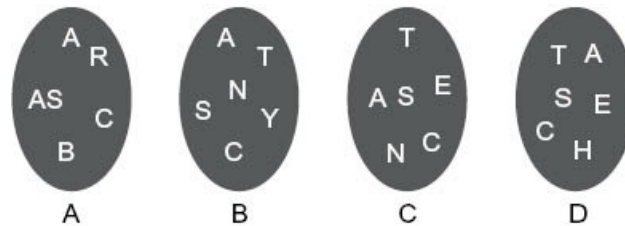
(d) Tanmay, Waman, Snehal.

17. What is the number of routes from P to Q?



- (a) 5 (b) 6
(c) 9 (d) 12

18. Find the circle, which does not include a word using all letters.



- (a) A (b) B
(c) C (d) D

19. It is possible to arrange eight of nine numbers 2, 3, 4, 5, 7, 10, 11, 12, 13 in the vacant squares of the 3 by 4 array shown below so that the arithmetic average of the numbers in each row and column is the same integer.

1			15
	9		
		14	

Which of the nine numbers must be left out when completing the array?

- (a) 4 (b) 10
(c) 15 (d) 7

20. What number will replace the question mark?



- (a) 40 (b) 18
(c) 19 (d) 24

21. Where should the letter 'W' be placed?

B	C	D	E	J	K	L	M
	A	F	G	H	I	N	

(a) Above

(b) Below

(c) Both

(d) None

22. At a family reunion were the following people: one grandfather, one grandmother, two fathers, two mothers, four children, three grandchildren, one brother, two sisters, two sons, two daughters, one father-in-law, one mother-in-law, and one daughter-in-law. But not as many people attended as it sounds. How many persons were there?

(a) 5

(b) 10

(c) 15

(d) 7

23. On the counter are six squares marked 1, 2, 3, 4, 5, 6. Players are invited to place as much money as they wish on any one square. Three dice are then thrown.

Σ If your number appears on one die only, you get your money back plus the same amount.

Σ If two dice show your number, you get your money back plus twice the amount you placed on the square.

Σ If your number appears on all three dice, you get your money back plus three times the amount.

Σ If the number is not on any of the dice, the operator gets your money.

For example, suppose that you bet one Rupee on square No. 6. If one die shows a 6, you get your Rupee back plus another Rupee. If two dice show 6, you get back your Rupee plus two Rupees. If three dice show 6, you get your Rupee back plus three Rupees.

From a player's point of view, the chance of his number showing on one die is $1/6$, but since there are three dice, the chances must be $3/6$ or $1/2$, therefore the game is a fair one. Of course this is the way the operator of the game wants everyone to reason, for it is quite fallacious.

What is the probable story?

(a) Operator gets a profit of 6% on each Rupee bet.

(b) Operator suffers a loss of 7.8% on each Rupee bet.

(c) Operator gets a profit of 7.8% on each Rupee bet.

(d) The player suffers a loss of 6% on each Rupee bet.

24. Jaideep was given some money by his mother on his birthday. Jaideep spent all of it in four stores. In each store he spent one rupee more than half of what he had when he came in. How much did he get from his mother?

(a) ` 25

(b) ` 30

(c) ` 46

(d) ` 52

25. Consider the following two statements to be true even if they seem to be at variance from commonly known facts. Then decide which of the given conclusions logically follows from the two given statements. Select the correct alternative.

Statements: All Lawyers are extrovert.

Some wise men are extrovert.

Conclusions:

(ja) All lawyers are wisemen.

(jb) All wisemen are lawyers.

(jc) Some extrovert are wisemen.

(jd) All extrovert are lawyers

(a) Only (ja) follows.

(b) Only (jb) and (jc) follows.

(c) Only (ja) and (jc) follows.

(d) Only (jc) follows.

Directions for Questions 26 to 28: Use the data given below to answer the questions.

The following are the results of a survey conducted on a small cross-section of students from Symbiosis Group of institutes, to determine the readership of three magazines. This survey was conducted in Dec. 2006.

Σ Number of students who read only Business India was 40

Σ 60 students read only Outlook

Σ 110 students read only India Today

Σ 30 students read all the three magazines

Σ 20 read Business India and India Today, but not Outlook

Σ 50 read Business India and Outlook, but not India Today

Σ 40 read Outlook and India Today, but not Business India

26. What was the total no. of students surveyed?

(a) 210

(b) 350

(c) 390

(d) None of these

27. How many students did not read Business India?

(a) 40

(b) 170

(c) 240

(d) None of these

28. When another survey was conducted in May 2007 with the same set of students, their tastes

had changed and the findings were different. All of them read India Today. 120 read Outlook, and no one read Business India. Hence, in May 2007, how many students read only India Today?

- (a) 60
- (b) 110
- (c) 230
- (d) None of these

29. An ingredient in coffee, known as RTC, has been found to inactivate common cold viruses in experiments. In previous experiments, researchers found that inactivated common cold viruses can convert healthy cells into cancer cells. It can be concluded that the use of coffee can cause cancer.

Which one of the following, if true, most seriously weakens the argument?

- (a) Several teams of scientists performed the various experiments, and all of the teams had similar results.
 - (b) The carcinogenic effect of RTC could be neutralized by the other ingredients found in coffee.
 - (c) When RTC kills common cold viruses it weakens the immune system, and it might thus diminish the body's ability to fight other viruses, including viruses linked to cancers.
 - (d) If chemists modify the structure of RTC, RTC can be safely incorporated into medications to prevent the common cold.
30. A census taker approaches a house and asks the woman who answers the door, "How many children do you have, and what are their ages?" Woman: "I have three children, the product of their ages is 36, the sum of their ages is equal to the address of the house next door."
- The census taker walks next door, comes back and says, "I need more information."
- The woman replies, "I have to go, my oldest child is sleeping upstairs."
- Census taker: "Thank you, I now have everything I need."
- What are the ages of each of the three children?
- (a) 9, 2, 2
 - (b) 6, 6, 1
 - (c) 12, 3, 1
 - (d) 6, 3, 2

Answer Key

1. (a)	2. (b)	3. (d)	4. (d)	5. (d)	6. (d)
7. (c)	8. (d)	9. (c)	10. (c)	11. (c)	12. (c)
13. (a)	14. (b)	15. (b)	16. (a)	17. (b)	18. (a)
19. (b)	20. (b)	21. (b)	22. (d)	23. (a)	24. (b)
25. (d)	26. (b)	27. (d)	28. (c)	29. (b)	30. (a)

Solutions:

- 1. Since all labels are wrong, the box labeled GOLD OR SILVER would have neither gold nor silver. Thus, it would have bronze. Consequently, the chest marked GOLD, would have silver in it and the chest marked SILVER, would have gold in it. Thus, we do not need to open any chest in order to find out which chest has which coins. Thus, option (a) is correct.
- 2. 27 minutes past 10 AM is 93 minutes before 12 noon. Option (b) is correct.

Solutions for Questions 3 to 5:

The starting grid would look as follows:

1	2	3	4	5	6

We first place Miss Harsha in the 5th office. The grid would become:

1	2	3	4	5	6
				Harsha	

The other people are: Ruby (telephone use throughout the day), Minhas-Brar (together and need to discuss), Dongre (needs silence) and Tanjore.

Also, Tanjore, Minhas and Dongre being smokers they would not occupy the 4th or the 6th cabin. Also, Brar cannot occupy the 6th cabin as he needs to be with Minhas.

This leaves us with only Ruby to occupy the 6th office. Also, Brar being the only other non-smoker he would need to be put into the 4th cabin, and Minhas obviously has to be his neighbor.

The grid would become:

1	2	3	4	5	6
		Minhas	Brar	Harsha	Ruby

We are just left to place Tanjore and Dongre now. Dongre needs to have silence and hence he cannot be put in the 2nd cabin next to Minhas (as Minhas would be continuously discussing with Brar throughout the day).

Thus, Dongre would take the 1st cabin and hence, Tanjore would take the 2nd cabin.

The grid would end up as:

1	2	3	4	5	6
Dongre	Tanjore	Minhas	Brar	Harsha	Ruby

- 3. Option (d) is correct.
- 4. Option (d) is correct.
- 5. Option (d) is correct.
- 6. Since Shankar and Jwala both ‘refuse to work with each other’ it obviously means that either

one of them can be appointed but not both. Option (d) is correct.

7. The obvious answer in this case is that both the totals need not be equal.

For example, if he had withdrawn `100 in the first case, the columns would look like:

	Withdrawals	Balance Left
	100	0
TOTAL	100	0

Hence, option (c) is the correct answer.

8. In each row, there is one figure with two legs, one with three legs and one with 4 legs. Hence, the third figure in the bottom row should have 2 legs. This leaves us between figures 2 and 5. The other thing you can notice in the first two rows is that of the three figures, only one figure has flat bottom extensions to some or all of their legs. In the third row, the second figure has already used flat bottom extensions to the legs in the second figure of the row. Thus, the figure, which would replace the question mark would not have flat bottom extensions.

Thus, we need figure 5 amongst those shown to replace the question mark.

Thus, option (d) is correct.

9. The right side of the first figure in the two-figure analogy is replaced by a two-sided angle kind of structure. The third figure gives us the same relationship. Option (c) is correct.
10. In the pattern of the five figures shown, the dark quarter of the figure is rotating in a clockwise fashion. Thus, in the missing figure the dark quarter should be at the bottom right. Figure (d) gives us that. Hence, option (c) is correct.

Solutions for Questions 11 to 13:

The starting grid in this case would be:

Starting Salary	Name of person	Profession
70000		MD
60000		
50000		
40000		

The four persons are: Arvind, Biswajeet (lawyer), Chinmay, Dhruv (engineer). This leaves us with two professions, which have not been fixed with the respective persons. Between Arvind and Chinmay the professions of doctor and MD are to be shared.

Since, the lawyer and the engineer did not start on 50000 (which is evident from the statement 'Biswajeet the lawyer did not start on ` 50000 nor did Dhruv) it must be the doctor who started with 50000. The grid becomes:

Starting Salary	Name of person	Profession

70000		MD
60000		
50000		Doctor
40000		

At this point, the statement “the doctor earned more than Dhruv the engineer” becomes usable in the grid and can be put into the grid. The engineer would become the person with 40000 starting salary and obviously then the lawyer would be starting with 60000.

The grid would then become

Starting Salary	Name of person	Profession
70000		MD
60000	Biswajeet	Lawyer
50000		Doctor
40000	Dhruv	Engineer

From this point, if we use that Arivnd > Biswajeet we know that Arvind is the MD. The fina solution grid becomes:

Starting Salary	Name of person	Profession
70000	Arvind	MD
60000	Biswajeet	Lawyer
50000	Chinmay	Doctor
40000	Dhruv	Engineer

The answers can then be read off the above table.

- Chinmay is a doctor. Option (c) is correct.
- The lwayer started at ` 60000. Option (c) is correct.
- Arvind received the highest starting salary. Option (a) is correct.
- The first rest day would be on the next Tuesday and can be visualised as:

Monday	Tuesday	Wednesday	Thursday	Friday
Day 1	Day 2	Day 3	Day 4	Day 5
Saturday	Sunday	Monday	Tuesday	
Day 6	Day 7	Day 8	Rest Day	

The second round of work would start on Wednesday and end on the next Wednesday and consequently, the next rest day would be on a Thursday.

The respective rest days can be visualised as below:

Rest Day 1	Rest Day 2	Rest Day 3	Rest Day 4	Rest Day 5
Tuesday	Thursday	Saturday	Monday	Wednesday
Rest Day 6	Rest Day 7	Rest Day 8	Rest Day 9	Rest Day 10
Friday	Sunday	Tuesday	Thursday	Saturday
Rest Day 11	Rest Day 12			
Monday	Wednesday			

Option (b) is the correct answer.

15. Figures 2, 3 and 7 are rotated in a opposite direction to the figures 1, 4, 5 and 6. Thus, these figures are the odd ones out. Option (b) is correct.
16. If we consider the two statements that Babloo has made, it is clearly evident that his first statement cannot be true. Because, if his first statement “Tanmay won the race” were true, then Bunty’s second statement “Tanmay came second” is false. Then, Bunty’s first statement “It was Snehal who won” must be correct; but it cannot be correct since, if Bunty won the race, then Snehal cannot come first. In such an event, if we were to consider Babloo’s first statement to be true, both of Bunty’s statements would be false – which goes against the basic condition of the question.

Hence, Babloo’s second statement “Waman came second” must be true. Then Bunty’s second statement “Tanmay came second” is naturally false and hence Bunty’s first statement “It was Snehal who won” must be true.

So, Snehal came first, Waman came second and Tanmay came third. Option (a) is correct.

17. The routes can be counted as:
P-1-4-Q; P-1-5-Q; P-3-5-Q; P-3-4-Q; P-2-4-Q; P-2-5-Q Thus, there are a total of 6 route from P to Q.

Option (b) is the correct answer.

18. The word formed by using the letters in the circle B is: SCANTY.

In Circle C: SECANT and in Circle D: CHEATS.

Only the letters of Circle A do not form a complete word if all the six letters are used. Option (a) is correct.

19. The total of all the numbers given to us would be given by:

(Sum of numbers listed separately in the question) + (Numbers already placed in the grid) =
 $(2 + 3 + 4 + 5 + 7 + 10 + 11 + 12 + 13) + (1 + 9 + 14 + 15) = 106.$

The number that should be left out should be such that after it’s removal, the sum of all other remaining numbers should be divisible by 3 as well as by 4. This is because, we need to have the total sum of the remaining numbers such that it can be divided into three equal integral elements (for the rows). Besides, this number should also be possibly divisible into four equal integral elements (for the columns).

Looking at the options, if we check for option (a):

Leaving out the digit 4, leaves us with a sum of 102 for the remaining 12 numbers. This can be divided into 3 rows summing up to 34 each.

However, we cannot break up 102 into 4 equal integral parts and hence we cannot leave out 4 and achieve the desired result.

If we check for option (b):

Leaving out the number 10, leaves us with a sum of 96 for the remaining 12 numbers. This can be divided into 3 rows summing up to 32 each.

Besides, 96 can also be broken up into 4 equal integral parts of 24 each.

If we check for option (c), it gets rejected based on the following thinking:

Leaving out the number 15, leaves us with a sum of 91 for the remaining 12 numbers. This cannot be divided into 3 equal integral values for each row. Hence, this option is obviously wrong.

If we check for option (d):

Leaving out the number 7, leaves us with a sum of 99 for the remaining 12 numbers. This can be divided into 3 rows summing up to 33 each.

However, we cannot break up 99 into 4 equal integral parts and hence we cannot leave out 7 and achieve the desired result.

Thus, only option (b) is feasible and is the correct answer.

20. In this case, the product of the last two numbers in every set of 4 numbers, is double the product of the first two numbers.

Thus, in the first set: $12 \times 8 = 2 \times (6 \times 8)$;

In the second set: $6 \times 10 = 2 \times (5 \times 6)$;

In the third set: $4 \times ? = 2 \times (3 \times 12)$ $\therefore$ the number in place of the question mark should be 18. Hence option (b) is correct.

21. The series of alphabets is:

A (below) – BCDE (above) – FGHI (below) – JKLM (above) – NOPQ (below) – RST (above) – VWXY (below)

Hence, W should be placed below. Option (b) is correct.

22. The following family structure would give the required relations:

First Generation	X (Man)	Y (Woman)	X and Y are a husband wife couple
Second Generation	Z(Man)	A (Woman)	Z is X and Y's Son
Third Generation	B (Male), C (Female), D (Female)		B, C and D are the children of A and Z.

In this case the following holds:

1 Grandfather = X;

1 Grandmother = Y;

Two Fathers = X and Z;

Two Mothers = A and Y;
 Four Children = Z, B, C and D;
 Three grand children = B, C and D;
 One brother = B;
 Two Sisters = C and D;
 Two Sons = Z and B;
 Two daughters = C and D;
 One father-in-law = X;
 One Mother-in-law = Y
 One daughter-in-law = A.

In this case there are only seven people required to fulfill all conditions specified by the problem. These are (X, Y, Z, A, B, C and D) Thus, there are 7 people in the family.

Option (d) is correct.

23. In such cases, the operator always wins and the only option that satisfies this condition is option (a). Options (b) and (c) cannot be correct because they talk about the operator suffering a loss—which would not be true in an operator defined and controlled game. Hence, these options can be rejected. Option (d) is also rejected because whether the player wins or loses will change with every throw of the die and depends on the actual outcome of the throw.

Option (a) is correct.

24. If he got ` 30, his spends would be:

First store = 16; Money left = 14;

Second store = 8; Money left = 6

Third store = 4; Money left = 2;

Fourth store = 2; Money left = 0.

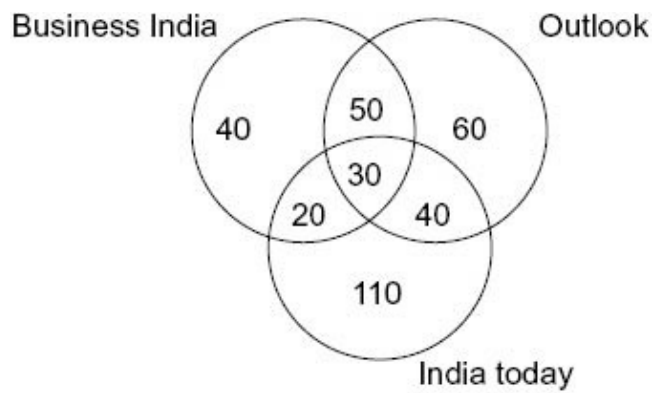
Thus, option (b) is correct.

25. If some wise men are extrovert, then it necessarily follows that some extrovert are wise men. Thus, (jc) is definitely correct as a conclusion. Conclusion (ja) is not necessarily true and neither is (jb) necessarily true.

Option (d) is correct.

Solutions for Questions 26 to 28:

The following Venn diagram would give us the overall structure of the numbers involved in this situation:



The solutions to the question can be read off from the given diagrams.

26. The total number of students surveyed = $40 + 50 + 60 + 20 + 30 + 40 + 110 = 350$.

Option (b) is correct.

27. $110 + 40 + 60 = 210$ students did not read Business India. Option (d) is correct.

28. The number of students who read only Business India in May 2007 = $350 - 120 = 230$. Option (c) is correct.

29. If the other ingredients in coffee have a neutralising effect on the carcinogenic effects of RTC, then the conclusion “Use of coffee can cause cancer” is most seriously weakened.

Option (b) is the correct answer.

30. In order to visualise the different ways in which 36 can be written as a product of 3 factors, we first need to think of the factors of 36 above and including the square root of 36. These are: 36 itself, 18, 12, 9, 6

The different ways in which a product of 36 can be formed using 3 numbers are

$36 \nmid 1 \nmid 1$ (sum of the factors = $36 + 1 + 1 = 38$);

$18 \nmid 2 \nmid 1$ (sum of the factors = $18 + 2 + 1 = 21$);

$12 \nmid 3 \nmid 1$ (sum of the factors = $12 + 3 + 1 = 16$);

$9 \nmid 4 \nmid 1$ (sum of the factors = $9 + 4 + 1 = 14$);

$9 \nmid 2 \nmid 2$ (sum of the factors = $9 + 2 + 2 = 13$);

$6 \nmid 3 \nmid 2$ (sum of the factors = $6 + 3 + 2 = 11$);

$6 \nmid 6 \nmid 1$ (sum of the factors = $6 + 6 + 1 = 13$).

Now the key to this question is to think of why the census taker cannot answer the question even though he knows that the sum of the ages is equal to the house number next door (which he has seen when he takes a walk to the next door).

In order to understand this, suppose the census taker had seen that the house next door was numbered 38. In such a case, he would have no issues identifying 36, 1 and 1 as the three ages.

Similarly, if the house next door was numbered 21, 16, 14 or 11 the census taker would immediately be able to deduce the three ages. Since, he asks for more information it means that he must be having two solutions for the ages—where the sum of ages were equal. This happens in the case of $9 + 2 + 2 = 13 = 6 + 6 + 1$. The moment he knows that she has an eldest child, he rules out the possibility of the ages being 6, 6 and 1. Thus, the ages of the three

children are 9, 2 and 2. Option (a) is correct.

1. Study this matrix.

6	2	5	1
3	1	4	7
4	1	9	5
3	1	2	4

In this game there are two players. The first player can split the matrix vertically into two equal halves and choose one half for further play. The next move on this half is by the other player who will split it only horizontally and choose one half for further play. The game will continue in this manner. At the end, the last number left is the first player's gain.

If you start the game, retain the right half and, again right half after your opponent's move, then how should your opponent play to minimize your gain?

- (a) Retain upper, retain lower
 - (b) Retain upper, retain upper
 - (c) Retain lower, retain upper
 - (d) Retain lower, retain lower
2. What is the next letter in the series?
- U, F, Q, J, M, N
- (a) I
 - (b) T
 - (c) O
 - (d) M

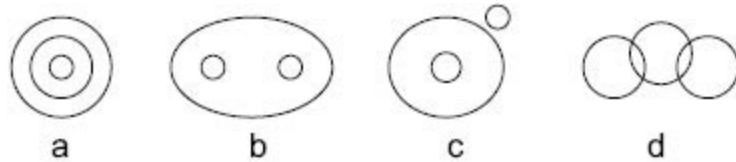
3. Sonal, a mathematician, defines a number as 'connected by 6' if it is divisible by 6, or if the sum of its digits is 6, or if 6 is one of the digits of the number. Other numbers are all 'not connected with 6'. As per this definition, the number of integers, from 1 to 60 (both inclusive) which are not connected with 6 is

- (a) 18 (b) 43
(c) 22 (d) 42
4. Leena, Nitin, Arun and Mohan crossed a lake in a canoe that could hold only two persons. The Canoe held two persons on each of three forward trips across the lake and one person on each of two return trips. Leena was unable to paddle when someone else was in the canoe with her. Nitin was unable to paddle when anyone else except Arun was in the canoe with him. Each person paddles continuously for at least one trip. Who paddled twice?
- (a) Leena (b) Nitin
(c) Mohan (d) Arun
5. A, B, C, D, E, F and G are the members of a family consisting of 4 adults and 3 children, two of whom, F and G are girls. A and D are brothers and A is doctor. E is an engineer married to one of the brothers and has two children. B is married to D and G is their child. Who is C?
- (a) G's father (b) F's father
(c) E's daughter (d) A's son
6. If every alternative letter of English Alphabet from B onwards (including B) is written in lower case (small letters) and the remaining letters are capitalised, then: How will be the first month of the second half of the year be written?
- (a) AuGuSt (b) JuLy
(c) jUIY (d) AugUSt
7. A rich merchant had collected many gold coins. He did not want anybody to know about them. One day, his wife asked, "How many gold coins do we have?" After pausing a moment, he replied, "Well! If I divide the coins into two unequal numbers, then 48 times the difference between the two numbers equals the difference between the squares of the two numbers." The wife looked puzzled. Can you help the merchant's wife by finding out how many gold coins the merchant has?
- (a) 96 (b) 53
(c) 43 (d) None of these
8. An enterprising businessman earns an income of ` 1 on the first day of his business. On every subsequent day, he earns an income which is just double of that made on the previous day. On the 10th day of business, his income is
- (a) ` 2<sup>9</sup> (b) ` 2¹⁰
(c) ` 10<sup>2</sup> (d) ` 10
9. One night three naughty boys stole a basketful of apples from the garden, hid the loot and went to sleep. Before retiring they did some quick counting and found that the fruits were less than a hundred in number. During the night one boy awoke, counted the apples and found that he could divide the apples into three equal parts if he first took one for himself. He then took one apple, ate it up and took 1/3 of the rest, hid them separately and went back to sleep. Shortly

thereafter another boy awoke, counted the apples and he again found that if he took one for himself the loot could be divided in to three equal parts. He ate up one apple, bagged $\frac{1}{3}$ of the remainder, hid them separately and went back to sleep. The third boy also awoke after some time, did the same and went back to sleep. In the morning when all woke up, and counted apples, they found that the remaining apples again totaled to 1 more than could be divided into three equal parts. How many apples did the boys steel?

- (a) 67 (b) 79
(c) 85 (d) None of the above

Directions for Questions 10 and 11: Choose from these four diagrams the one that best illustrates the relationship among three given classes.



10. Chilli, Salt, Vegetables
11. Students of Law, Students of Science, Men

Directions for Questions 12 to 16: Study the following example and answer the questions.

An electronic device rearranges numbers step-by-step in a particular order according to a set of rules. The device stops when the final result is obtained. In this case the device stops at Step V.

Input:	85	16	36	04	19	97	63	09
Step I	97	85	16	36	04	19	63	09
Step II	97	85	63	16	36	04	19	09
Step III	97	85	63	36	16	04	19	09
Step IV	97	85	63	36	19	16	04	09
Step V	97	85	63	36	19	16	09	04

12. Which of the following will be Step III for the input below?

Input:	09	25	16	30	32	18	17	06
(a)	32	09	25	16	30	18	17	06
(b)	32	30	09	25	16	19	17	06
(c)	32	30	09	25	16	18	17	06
(d)	32	30	25	09	16	18	17	06

13. What is the last step for the input below?

Input: 16 09 25 27 06 05

- (a) Step II (b) Step III
(c) Step IV (d) None of the above

14. What is the output of Step V for the input below?

Input:	25	08	35	11	88	67	23
(a)	88	67	35	25	23	11	08
(b)	88	67	35	25	23	08	11
(c)	08	11	23	25	35	67	88
(d)	None of the above						

15. Which one of the following would be the last step for the input below?

Input: 0.3 31 43 22 11 09

- (a) Step II (b) Step III
(c) Step IV (d) None of the above

16. If the output of Step IV is as given below, what was the input?

Step IV:	92	86	71	69	15	19	06	63	58
(a)	86	92	69	71	15	19	06	63	58
(b)	15	86	19	92	06	69	63	58	71
(c)	15	19	06	63	58	86	92	69	71
(d)	None of the above								

Directions for Questions 17 and 18: Read the following information carefully and then answer the questions given below.

- P # Q means P is the father of Q
P + Q means P is the mother of Q
P – Q means P is the brother of Q
P * Q means P is the sister of Q

17. If $A + B \# C - D$, then A is D's

- (a) Sister (b) Grandfather
(c) Grandmother (d) Father

18. Which of the following shows that A is the Aunt of E?

- (a) $A - B + C \# D * E$
(b) $A * B \# C * D - E$
(c) $A \# B * C + D - E$
(d) $A + B - C * D \# E$

Answer Key

1. (d)	2. (a)	3. (b)	4. (d)
5. (d)	6. (c)	7. (d)	8. (a)

9. (b)	10. (c)	11. (d)	12. (d)
13. (a)	14. (a)	15. (d)	16. (d)
17. (c)	18. (b)		

Solutions:

1. If you are retaining right, your opponent can either retain upper or retain lower. Your next move would depend on what your opponent has done as he plays to minimize your gain and you play to maximize your own gain.

Since, your next move is retain to right again, it is evident that your opponent would have chosen 'retain lower' in his first move.

You can think of this as follows:

If your opponent's first move is to retain upper, the grid you would get is:

5	1
4	7

In this case, your next move would logically be to 'retain left' as you would then expect a minimum of 4. In case from the above situation you go to retain right, you would then only expect to get a return of '1' from the game.

Since, it is given that you chose to retain right again, you definitely would not have got the above grid in front of you.

In the other possibility, you can think of the chain of events that would occur in case your opponent chose to 'retain lower'.

The grid you would get in this case would be:

9	5
2	4

From the above case, your logical next step would be to retain right.

Thus, since we know that your second move is to retain right, it follows that your opponent's first move is to '**retain lower**'.

After this when you retain right, the numbers left in the grid would be:

5
4

Your opponent would again '**retain lower**' in this case.

Thus, he must have played ‘**retain lower**’ & ‘**retain lower**’. Option (d) is correct.

2. There are two series intertwined in the given series.

F-J-N (skip 3 alphabets)

U-Q-M (skip 3 alphabets in the opposite order).

The next letter would depend on the second series above. After M, the 3 letters to be skipped are L, K, J and hence ‘I’ should be the next letter in the series. Option (a) is correct.

3. The numbers would be 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14, 17, 19, 20, 21, 22, 23, 25, 27, 28, 29, 31, 32, 34, 35, 37, 38, 39, 40, 41, 43, 44, 45, 47, 49, 50, 52, 53, 55, 57, 58 and 59.

There are 43 such numbers. Option (b) is correct.

Alternately, you could also have counted the numbers to be left out as: 6, 12, 18, 24, 30, ... 60 (10 numbers which are multiples of 6); and 15, 33, 51 (which have a sum of digits of 6); and 16, 26, 46 and 56 (numbers which have 6 in them). There are 17 numbers which have to be left out from the 60 numbers. Hence, 43 numbers have to be counted. Option (b) is correct.

4. The flow would be:

Trip description	People travelling	Person rowing
First forward trip	Nitin & Arun	Nitin
First return trip	Arun	Arun
Second forward trip	Leena & Arun	Arun
Second return trip	Leena	Leena
Third forward trip	Leena and Mohan	Mohan

Thus, Arun would be rowing twice.

Option (d) is correct.

5. Collating the information you would get that the family tree consists of the couples: A (husband and doctor), E (Engineer and A’s wife), D (husband), B (wife of husband). G being the child of B-D and being a girl would be B & D’s daughter. Similarly, F (girl) and C (boy) would be A’s and E children. Thus, C is A’s son. Option (d) is correct.

6. The alphabet would be written as: AbCdEfGhIjKlMnOpQrStUvWxYz.

JULY would then be written as: jUIY.

Option (c) is correct.

7. $48(x - y) = x^2 - y^2 \Rightarrow 48(x - y) = (x - y)(x + y) \Rightarrow (x + y) = 48$. Option (d) is correct.

8. Income on day 1: $= 2^0$; Income on day 2 $= 2^1$;

Income on day 3 $= 2^2$; Income on day 4 $= 2^3$;

Thus, income on day 10 $= 2^9$.

Option (a) is correct.

9. Solve this one through options.

For option (b) 79:

First boy, sees 79 apples eats 1 apple and hides 26 apples and leaves 52 apples;
Second boy, sees 52 apples eats 1 apple and hides 17 apples and leaves 34 apples;
Third boy, sees 34 apples eats 1 apple and hides 11 apples and leaves 22 apples;
The final number is still one more than a multiple of 3.

Thus, option (b) satisfies all the conditions of the problem.

If you try the same with option (a) for instance you would get:

First boy, sees 67 apples eats 1 apple and hides 22 apples and leaves 44 apples;

This number is not one more than a multiple of 3. Hence, options (a) gets rejected.

If you try the same with option (c) for instance you would get:

First boy, sees 85 apples eats 1 apple and hides 28 apples and leaves 56 apples;

This number is not one more than a multiple of 3. Hence, options (c) gets rejected.

Option (b) is the correct answer.

Solutions for Questions 10 and 11:

10. Chillies are vegetables and Salt is not a vegetable. The correct figure for this question is the third figure. Option (c) is correct.
11. Some students of law are men (some might be women). Besides, some students of science are men (some might be women). Also, no student of law is a student of science, i.e. they are mutually exclusive categories. The fourth figure exhibits this relationship.

Option (d) is correct.

Solutions for Questions 12 to 16:

From the input to the output it is clear that the electronic device just arranges all the numbers in a decreasing order. It does so by progressively getting the left most numbers in the sequence in the correct order. Based on this understanding you can move on to solve the questions.

12. Input: 09, 25, 16, 30, 32, 18, 17, 06

Step I: 32, 09, 25, 16, 30, 18, 17, 06

Step II: 32, 30, 09, 25, 16, 18, 17, 06

Step III: 32, 30, 25, 09, 16, 18, 17, 06

Option (d) matches with this third step.

Hence, option (d) is correct.

13. Input: 16, 09, 25, 27, 06, 05

Step I: 27, 16, 09, 25, 06, 05

Step II: 27, 25, 16, 09, 06, 05

Option (a) is correct.

14. Input: 25, 08, 35, 11, 88, 67, 23

Step I: 88, 25, 08, 35, 11, 67, 23

Step II: 88, 67, 25, 08, 35, 11, 23

Step III: 88, 67, 35, 25, 08, 11, 23

Step IV: 88, 67, 35, 25, 23, 08, 11

Step V: 88, 67, 35, 25, 23, 11, 08

Option (a) is correct.

15. Input: 03, 31, 43, 22, 11, 09

Step I: 43, 03, 31, 22, 11, 09

Step II: 43, 31, 03, 22, 11, 09

Step III: 43, 31, 22, 03, 11, 09

Step IV: 43, 31, 22, 11, 03, 09

Step V: 43, 31, 22, 11, 09, 03

Thus, step V is the final step. Option (d) is the correct answer.

16. It is not possible to determine a unique input in such situations as there are multiple inputs that are possible which can give you Step IV as described. In fact, if you check the options themselves, you can see that both option (b) and option (c) give you Step IV as described by the question.

Hence, option (d) is correct.

Solutions for Questions 17 and 18:

17. $A + B \# C - D$ Converts to A is the Mother of B, B is the father of C, C is the brother of D. Thus, A is D's grandmother. Option (c) is correct.

18. The relationship shown in option (b) converts to: A is the sister of B, B is the father of C, C is the sister of D and D is the brother of E. This means that C, D and E are siblings as they are all children of B. Further, since A is the sister of B (C, D and E's father), it naturally follows that A is the aunt of E. Thus, option (b) is the correct answer.

Model Test Paper

(Base on the Latest Online Pattern)

Instructions:

Time: 70 mins in each section

This section contains 1 model test paper. The paper has 2 sections having 20 questions each. In order to reach the qualifying score, you would need to solve at least 36 questions at 100% accuracy. However at an accuracy of 90%, you would need around 45 attempts with at least 40 correct questions.

While taking the test you have to ensure that you have to spend the entire 70 mins allocated for a section within the section itself. You are not allowed to move between the sections while solving a section.

Model Test Paper

Section I: Verbal Ability and Logical Reasoning

1. People in the South have observed that heavy frost is usually preceded by a full moon. They are convinced that the full moon somehow generates the frost.

Which of the following, if true, would weaken the peoples' conviction?

- (a) The temperature must fall below 10 degrees Celsius (50 degrees Fahrenheit) for frost to occur.
 - (b) Absence of a cloud cover cools the ground which causes frost.
 - (b) People are superstitious.
 - (d) People are not experts in meteorology.
2. Professor Jha told his class that the method of student evaluation of teachers is not a valid measure of teaching quality. Students should fill out questionnaires at the end of the semester when courses have been completed.

Which of the following, if true, provides support for Professor Jha's proposal?

- (a) Professor Jha received low ratings from his students.
- (b) Students filled out questionnaires after the midterm exam.
- (c) Students are interested in teacher evaluation.
- (d) Student evaluation of teachers is voluntary.

Directions for Questions 3 and 4: In each of the following questions select the most appropriate word from the options given, which would meaningfully complete the sentence.

3. All achievers take the track _____ travelled.

- (a) frequently
- (b) less
- (c) sincerely
- (d) casually

4. The company secretary pointed that the company's entering into contract with another firm did not _____ breach of faith.

- (a) constitute a (b) vilify a
(c) tantamount to (d) propagate a

For each of the following questions find the sentence/s that is/are correct.

5.

- A. When you look up a word, the main thing that you want to know was its basic meaning.
- B. It's time to winding up the discussion now.
- C. A great many various words in English have more than one meaning.
- D. That wasn't a very fair thing to say!

- (a) D only
(b) A & D
(c) A, B and D
(d) All of the above are correct

6.

- A. She has a fair chance of winning the first prize.
B. Fair weather is forecasted for tomorrow.
C. There's a fair on at the park this very week.
D. Don't forget to wind down your watch.

- (a) A only
(b) A & C
(c) A,B and C
(d) None of the above are correct

Directions for Questions 7 to 9: Arrange the sentences in a proper manner so as to create a coherent paragraph.

7.

- A. I lived with my grandparents until I left home at 16.
- B. She worked and did very well, but she still needed the support her parents provided, and we lived with them in New York for many years.
- C. So all three of them my mum, Ondrea Smith, and my grandparents Eugene and Ellen Griffith raised me.
- D. Don't get me wrong; my mum was around too.
- E. But she was a single parent and had me when she was just 21.

- (a) AEDCB

(b) ADEBC
- (c) CADEB

(d) ACDED

8.

- A. The man shook his head and pointed to a stage close to my wife, where the pianist was sitting at a grand piano, cheerfully playing away.
- B. As the negotiations were completely new to her, she had to focus her full attention on the discussion.
- C. She was invited by some customers to discuss business in a well-known tavern.
- D. The background music bothered her greatly so when the waiter was passing her table, she asked if he could turn the music down.
- E. My wife had just been appointed bank manager of a local branch.

(a) ECBDA

(b) EBCDA

(c) BCDAE

(D) BCDEA

9.

- A. And long before anyone in my class had heard of ballroom dancing, my mother played swing music on the gramophone in the living room, took me in her arms and taught me how.
- B. By age 12, after a series of operations, I could walk unaided.
- C. By the time I was seven, my mother had moved on to tennis, which she decided I could play while wearing black galoshes over my brown orthopedic shoes.
- D. When I turned 15, she signed me up for dancing school with boys.

(a) CABD

(b) CBDA

(c) CDAB

(d) CBAD

Passage – I

Anyone who trains animals recognises that human and animal perceptual capacities are different. For most humans, seeing is believing, although we occasionally brood whether we can believe our eyes. The other senses are largely ancillary; most of us do not know how we might go about either doubting or believing our noses. But for dogs, scenting believes. A dog's nose is to ours as the wrinkled surface of our complex brain is to the surface of an egg. A dog who did comparative psychology might easily worry about our consciousness or lack thereof, just as we worry about the consciousness of a squid.

We who take sight for granted can draw pictures of scent, but we have no language for doing it the other way about, no way to represent something visually familiar by means of actual scent. Most humans cannot know, with their limited noses, what they can imagine about being deaf, blind, mute, or paralyzed. The sighted can, for example, speak of a blind person as “in the darkness,” but there is no corollary expression for what it is that we are in relationship to scent. If we tried to coin words, we might come up with something like “scent-blind.” But what would it mean? It couldn't have the sort of meaning that “colour-blind” and “tone-deaf” do, because most of us have experienced what “tone” and “color” mean in those expressions, but we don't know what “scent” means in the expression “scent-blind” Scent for many of us can be only a theoretical, technical expression that we use because

our grammar requires that we have a noun to go in the sentences we are prompted to utter about animal's tracking. We do not have a sense of scent. What we do have is a sense of smell—for Thanksgiving dinner, skunks, and a number of things we call chemicals.

So if Fido and I are sitting on the terrace, admiring the view, we inhabit worlds with radically different principles of phenomenology. Say that the wind is to our backs. Our world lies all before us, within a 180-degree angle. The dog has—well, we don't know, do we?

He sees roughly the same things that I see but he believes the scents of the garden behind us. He marks the path of the black-and-white cat as she moves among the roses in search of the bits of chicken sandwich I let fall as I walked from the house to our picnic spot. I can show that Fido is alert to the kitty, but not how, for my picture-making modes of thought too easily supply falsifying literal representations of the cat and the garden and their modes of being hidden from or revealed to me.

10. The phrase “other senses are largely ancillary” (first paragraph) is used by the author to suggest that
 - (a) only those events experienced directly can be appreciated by the senses
 - (b) for many human beings the sense of sight is the primary means of knowing about the world
 - (c) smell is in many respects a more powerful sense than sight
 - (d) The perceptual capacity of an animal is a function of its ability to integrate all of its senses
11. The missing phrase in the incomplete sentences “The dog's—well, we don't know, do we?” (Third paragraph) refers to
 - (a) color blindness
 - (b) depth perception
 - (c) perception of the world
 - (d) concern for our perceptions
12. The author uses the distinction between “that” and “how” (last paragraph) in order to suggest the difference between
 - (a) a cat's way and a dog's way of perceiving
 - (b) verifiable hypotheses and whimsical speculation
 - (c) awareness of presence and the nature of that awareness
 - (d) false representations and accurate representations

Passage – II

Contemporary India is characterised by the blare and glare of globalisation and liberalisation, where economic considerations have relegated all other considerations to the background. The indices of the stock exchanges have shoved the indices of human development into oblivion. Everyone seems to have become ardent worshippers of the Mammon. We walk smugly with cans of cold drinks in our hands and do not even care to, cast a glance towards the emaciated contours of frail human frames suffering in silence, looking towards us with beseeching eyes for our kindness. We look down upon them as abominable worms, blissfully forgetting that they too breathe the same air, have the same

blood running in their veins and have the same limbs as we superhumans do. What these emaciated creatures lack is the deviousness and ingenuity to make money even at the cost of tears and toil of some body else's.

Unbridled consumerism in the wake of globalisation and liberalisation has commodified our approach to life; we have become utterly hedonistic and self-centred. We want to have everything for ourselves and don't like to leave anything for others. We have become dehumanised. We have turned ourselves into robots. We have lost our humanistic and spiritual moorings and have become adrift in the sea of materialism, little realising that the sea can never quench anyone's thirst. One has to go to the little pond or the well to quench it. The intoxication of materialism has made us forget that the matter only enslaves whereas the spirit liberates. Happiness in life is not contingent upon worldly possessions. On the contrary, it springs from a state of mind imbued with the feelings of compassion, love and caring for those who need our help.

Consumerism seems to have buried our faculties of sympathy and empathy. Regrettably, the ruling elite have played a vital role in triggering this avalanche of desire for pelf. They seem to be more concerned with the economics of governance rather than the sociology of governance. Millions of hapless people in this country are dying of thirst and hunger and are abandoning their home and hearth simply because, for them, water is still a mirage even after more than half a century of Independence. We are busy manufacturing and importing myriad models of cars and spending billions of rupees on petrol and diesel. Cars and petrol may be desirable but food and water are indispensable. It defies logic as to why, in the land of Swami Vivekananda and Mahatma Gandhi, we cannot lead a simple life with lofty ideals so that Gurudev Rabindranath Tagore's vision of a world 'Where head is held high and mind is without fear' may become a reality.

Of late, it has become a trend in our country to justify a thing on the basis of it being practiced in America or Europe. It is true that the civilisation of every country has some positive aspects, but it is also equally true that every country is unique in its own way. No country can do well to itself by imitating blindly and slavishly the practices of another country. India is a country where humanism and spiritualism have always reined supreme, where the value of renunciation for the common good have always held precedence over the desire for material wealth.

It is time we heeded the tenets of Gandhian economics and implemented them earnestly rather than look to the West for a model of economic development. Like Mahatma Gandhi has said: "The world has enough for everyone's need, but not enough for everyone's greed." We should adopt a materialistic way of living only to the extent it is essential for a decent living. The latter should not be construed as living in luxury because too much of luxury depraves one morally and physically just as too much sugar in one's diet can cause diabetes—a disease of attrition. The real joy in life is experienced only when we lend a helping hand to a man in need, when we provide food for an empty stomach, water to a parched throat, and smile to a desolate heart.

13. Why have indices of stock exchanges shoved the indices of human development into oblivion, according to the author?
- (a) Because we have become worshippers of Mammon
 - (b) Because economic considerations have relegated all other considerations to the background
 - (c) Because we do care to cast a glance towards the emaciated contours of frail human

frames

- (d) None of the above
14. The author's opinion about the poor is that
- (a) they lack the will to work
 - (b) they are the same as any other human being
 - (c) they lack deviousness and ability to make money at someone else's cost
 - (d) they deserve sympathy
15. The author's advice is
- (a) to go back to Gandhian economics
 - (b) to lend a helping hand to others
 - (c) to live simply
 - (d) none of the above

Passage – III

Bureaucracy is a remarkable thing. It is a self-perpetuating system existing for its own sake without regard for the people it is supposed to serve. It slows things down at the crucial point where the organisation actually is exposed to the customer. The cure for this is radically obvious. We have to design the organisation from the bottom up starting with the customer. Few established companies have trodden this path, however attractive it looks in theory; it is simply too different from the familiar past. But some at least, suggests Prof. Thomas Hunt at London Business School, have begun to experiment with the possibilities of adopting jobs to people rather than vice versa. Instead of the neat, logical lines of the typical functional division or business unit organisation chart, this leads apparently messy gross functional mixes—what Hunt called chiuord structures, amorphous, not easy for outsiders to understand and constantly changing according to the strengths and weaknesses of the available people. This is one factor, which Hunt believes could characterise the management of the future as an area of constant realignment. Another is the breaking down of business units into ever-smaller entities to cope up with growing demand of middle managers, to get their teeth into something practical for which they can take responsibility.

Few changes are entirely costless, however. Change for change's sake can easily become stressful and chaotic, leaving no time to actually perform the business. Similarly, the movement towards smaller units and continual alignment only serves the aims of flexibility if it is accompanied by real delegation of authority, plus clear performance measures.

Otherwise you get the worst of both worlds. Centralised bureaucracy and clear performance measures, as in some well-meaning civil service attempts, strengthens the hierarchy. Blancmange structures, meanwhile, not to mention self-employment, are only suitable for the very special sort of professionals who are comfortable in such fluid environments. Finally making units ever smaller needs a concomitantly complicated arrangement for strategy at the centre. There is a further dimension to this affair. In their relations with other organisations, organisations tend to become part of meta-bureaucracies—bureaucracies about bureaucracies. Some of these are evident—a doctor is a part of the National Health Scheme, which comes under the Department of Health, which is part of South Block, which is a part of others, and so on, but others are not evident. Although no less substantial,

they are unofficial and invisible to the naked eye.

J.K. Galbriath has a term for the way private and public bureaucracy's gang up to promote their mutual interest. He calls it 'Bureaucratic Symbiosis'. For Galbriath, big firms are largely bureaucratically driven, rather than economically driven, as textbooks hold. 'Bureaucratic Symbiosis' goes for explaining the puzzling results of much modern ingenuity. It explains the demented logic of the arms race, where the interest of both the private and public bureaucracies across the Iron Curtain is even more frightening than Western and Eastern military-industrial complexes on their own. It explains the otherwise incomprehensible ordering of fundamentally flawed systems like the highly sophisticated US naval escort ship which turned out to be too valuable to use in its planned role, without the addition of heavy armour, after which it was too heavy to keep up with the ships it was supposed to escort and had to be re-engined; or similarly expensive and sophisticated military aircraft, which needed 75 hours servicing for every flying hour. It explains, too, the phenomenon of planned obsolescence, and the ludicrous over-development of some parts of the economy versus others; defence versus health care, roads versus rail, nuclear versus renewable sources of energy. Private affluence, in fact, versus public squalor.

16. According to the author, bureaucracy
 - (a) is a good example of organising capacity of humans
 - (b) is based on actual experiences
 - (c) slows things down
 - (d) serves a purpose
17. Which of the following statements is not true?
 - (a) In bureaucracy, the customer plays an important role.
 - (b) Organisation charts may tend to be too rigid.
 - (c) For better service and success, the organisation should be redesigned.
 - (d) Some have tried to experiment the chances of adopting jobs to people.
18. In para 1, the writer of the passage shows his aversion to
 - (a) strong and changing business units
 - (b) change for change's sake
 - (c) the structural deficiencies in bureaucracy
 - (d) self-employment and other practical functional difficulties of bureaucracies
19. The author welcomes
 - (a) public affluence in bureaucracy
 - (b) better performances inside the bureaucratic set up
 - (c) private affluence in bureaucracy
 - (d) positive changes with least cost
20. The word 'symbiosis' is used by the author to mean
 - (a) Living together
 - (b) The shared interest of the private and public bureaucracies
 - (b) Association of two different organisations functioning detached to each other to their

mutual advantage

(d) organisation living in symbiosis

Directions for Questions 21 to 23: Study the following information carefully and answer the questions given below:

Seven friends A, B, C, D, L, M and Z are going to a new year's party on mobikes in Goa. Since it is late at night they do not anticipate any police presence and hence have taken only 3 bikes – an Enfield, a Honda and a TVS—with at least 2 of them sitting on each bike (hence there is triple riding on at least 1 bike). There is exactly one male on each bike. Amongst the group there are two executives, two designers and three psychologists.

- (i) C is a lady designer and she does not travel with the pair of sisters, A and M.
- (ii) B, a male executive, travels only with Z, a psychologist on an Enfield bike.
- (iii) D is a male designer.
- (iv) Two persons belonging to the same profession do not travel on the same bike.
- (v) A is not an executive and travels on the Honda.

21. What is M's profession?

- (a) Executive
- (b) Psychologist
- (c) Designer
- (d) Data inadequate

22. On which bike does C travel?

- (a) Enfield
- (b) Honda
- (c) TVS
- (d) Either Honda or TVS

23. Which of the following represents the three psychologists?

- (a) ZLM
- (b) ZLA
- (c) ZLM or ZLA
- (d) None of these

Directions for Questions 24 and 25: Each of the following questions contains six statements followed by four sets of combinations of three. Choose the set in which the statements are logically related.

24.

- (A) Some girls are elegant.
- (B) Harish loves Aishwarya.
- (C) Harish loves elegant girls.
- (D) Only smart persons are elegant.
- (E) Some girls are smart.
- (F) Aishwarya is elegant.

(a) CFB

(b) ABF

(c) ADE

(d) CEB

25.

(A) Most A's are B's.

(B) Most B's are C's.

(C) Most C's are A's.

(D) Most A's are C's.

(E) Most C's are B's.

(F) Most B's are A's.

(a) ABD

(b) EFB

(c) CAD

(d) None of these conclusions is valid.

Directions for Questions 26 to 29: Each question is followed by two statements, A and B. Answer each question using the following instructions:

Choose (a) If the question can be answered by using one of the statements alone but not by using the other statement alone.

Choose (b) If the question can be answered by using either of the statement alone.

Choose (c) If the question can be answered by using both statements together but not by either statement alone.

Choose (d) If the question cannot be answered on the basis of the two statements.

26. How many girls are taller than Rajeev in his class?

- I. When students of Rajeev's class are ranked in descending order of their height, Rajeev's rank is 23rd from the top among all the students and 17th among boys.
- II. Rajeev's rank from the bottom on the basis of height among boys is 36th and among all students is 49th.

27. Out of the four teams Australia, Bangladesh, India and Pakistan, which team, is least likely to win the world cup as per the opinion poll?

- I. As per the opinion poll, chances of team India's winning are more than that of Australia but not as much as that of team Bangladesh, whose chances of winning are more than that of Australia.
- II. As per the opinion poll India's chances of winning are less than that of Bangladesh but not less than that of Pakistan, whose chances of winning are more than that of Australia.

28. Tanveer is standing 22 steps to the left of a red mark and 35 steps to the right of a blue mark. He tosses a coin. If it comes up heads, he moves one step to the right; otherwise he moves one step to the left. He keeps doing this until he reaches one of the two marks, and then he stops.

At which mark does he stop?

- I. He stops after 217 coin tosses.
- II. He obtains three more tails than heads.

29. Namrata paid for an article using currency notes of denominations Re. 1, Rs. 2, Rs. 5, and Rs 10 using at least one note of each denomination. The total number of five and ten rupee notes used was one more than the total number of one and two rupee notes used. What was the price of the article?

- I. Namrata used a total of 17 currency notes.
- II. The price of the article was a multiple of Rs.10.

Directions for Question 30: A company is planning to organize 8 lectures A, B, C, D, E, F, G, and H for 3 subjects Quants, D.I. and English.

The lectures are spread over three days.

Quants is to be covered first in 3 lectures followed by English and then D.I. in 2 lectures. Lectures A, C, and D have to be on the same day. Lectures B and F have to be on separate day, but lecture E cannot be clubbed with A or G or D. Lecture G and H should come on the same day. [Lecture A is a lecture on Quants and Lecture C cannot be on the last day. It is also known that there are at least 3 lectures on day 1.]

30. Which of the following pairs of lectures can go along with lecture 'A' on Quants?

- (a) B, C
- (b) G, H
- (c) D, E
- (d) Data inadequate

Section II: Quantitative Aptitude and Data Interpretation

31. How many house number plates in a newly constructed defence colony can be made, if the no. plates have two letters of English alphabet followed by a two digit no., if repetition of digits or alphabets is not allowed?

- (a) 50000
- (b) 56800
- (c) 58500
- (d) 56500

32. A three digit number is divided into three two digit numbers and if all these three two digit numbers form an AP with a common difference of 20, how many three digit numbers satisfy this condition?

- (a) 54
- (b) 45
- (c) 46
- (d) 55

33. If Anuj walks at the rate of 5 km. per hr, he misses the train by 6 minutes. However, if he walks at the rate of 6 km. per hr, he reaches the station 6 minutes before the arrival of the train. Find the distance covered by him to reach the station.

- (a) 8 km
- (b) 5 km
- (c) 6 km
- (d) 7 km

Directions for Questions 34 and 35: A function f is defined for $x, y \in \mathbb{R}$ such that

$$f(0, y) = y^2 - 1$$

$$f(x + 1, y) = f(x, y + 4)$$

34. Find the value of $f(8, 4)$

(a) 1225

(b) 1000

(c) 1024

(d) 1295

35. Find the value of $f(5, 7) + f(3, 8)$

(a) 1225

(b) 1227

(c) 1226

(d) 1224

36. Walking at $\frac{5}{6}$ of his usual speed, Deepak is 15 minutes late for an appointment. Find the usual time he takes to cover the journey.

(a) 90 min

(b) 115 min

(c) 60 min

(d) 75 min

37. How many signals can be given with four traffic lights of different colours?

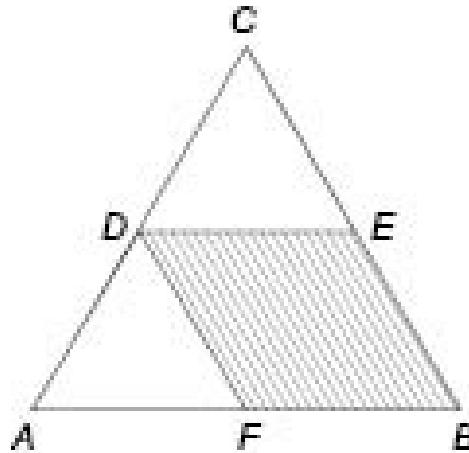
(a) 34

(b) 64

(c) 38

(d) 58

38. ABC is a triangle in which D, E and F are the mid –points of the sides AC, BC and AB respectively. What is the ratio of the area of the shaded to the unshaded region in the triangle?



(a) 4:5

(b) 3:5

(c) 1:1

(d) none of these

39. $f(x) = bx^2 + cx + d$, find the values of b, c such that $f(x + 1) - f(x) = 8x + 3$.

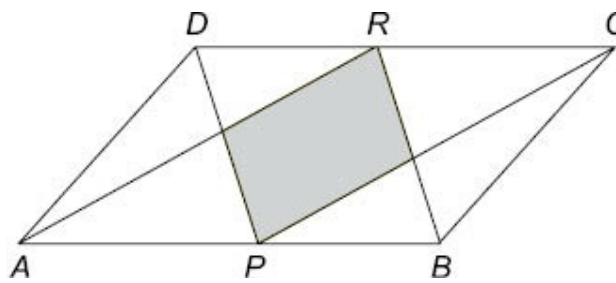
(a) $b = 2, c = 1$

(b) $b = 4, c = -1$

(c) $b = -1, c = 4$

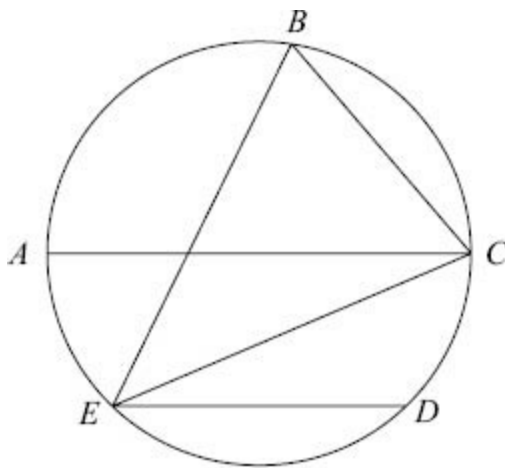
(d) $b = -1, c = 1$

40. In the adjoining figure ABCD, P and R are the mid points of the sides AB and CD. ABCD is a parallelogram. What is the ratio of the shaded region?



- (a) $\frac{1}{3}$ (b) $\frac{1}{2}$
 (c) $\frac{1}{4}$ (d) none of these
41. A bus after travelling 50 km. from A faces an accident and proceeds at $\frac{4}{5}$ th of the initial speed and reaches its destination 45 minutes late. Had the accident happened 20 km. further, it would have arrived 12 min. sooner. Find the original speed and the distance.
- (a) 25 km/hr, 110 km
 (b) 30 km/hr, 115 km
 (c) 20 km/hr 120 km
 (d) 25 km/hr, 125 km
42. If $-20 \leq a \leq 0$, then the probability of the function $y = 16x^2 + 8(a + 5)x - 7a - 5$ being always positive is:
- (a) $\frac{1}{2}$ (b) $\frac{1}{17}$
 (c) $\frac{17}{20}$ (d) $\frac{13}{20}$
43. Of all the 4 digits numbers (with distinct digits) that can be formed using any four of the five digits 1, 2, 3, 4 & 5, what is the sum of all those numbers which are divisible by 3?
- (a) 79992 (b) 78822
 (c) 54675 (d) 79982
44. Let $f(x)$ be a function such that $f(x + 1) + f(x - 1) = f(x)$ for every real x . Then for what value of N is the relation $f(x + N) = f(x)$ necessarily true for every real x ?
- (a) 6 (b) 5
 (c) 4 (d) 3
45. $2! + 4! + 6! + 8! + 10! + \dots + 100!$ divided by 3 would leave a remainder of:
- (a) 0 (b) 1
 (c) 2 (d) 3
46. The distance between two stations P and Q is 230 km. Two bikes start simultaneously from P and Q respectively, towards each other and the distance between them after 3 hours is 20 km. If the speed of one bike is less than that of the other by 10 km/hr, then the speed of the slower bike is:
- (a) 40 km/hr (b) 30 km/hr

- (c) 20 km/hr (d) 10 km/hr
47. In how many ways the letters of the word ASHISH can be arranged?
- (a) 100 (b) 140
(c) 150 (d) 180
48. The least value of expression $2\log_5 a - \log_a(1/25)$ for $x > 1$
- (a) 4 (b) 3
(c) 5 (d) 2
49. All the capital letters of the English alphabet from A to Z followed by the lower case letter from 'a' to 'z' are placed one in each slot, in 52 slots around a circle in clockwise direction. All the slots are counted in the clockwise direction starting with the slot containing A, and the letter in every fifth slot is removed. How many more slots will have letters left in them immediately after 'm' is removed from its slot?
- (a) 13 (b) 14
(c) 16 (d) 12
50. In the adjoining figure, chord ED is parallel to the diameter AC of the circle. If angle $CBE = 65^\circ$, then what is the value of angle DEC ?



- (a) 35 (b) 55
(c) 45 (d) 25

Directions for Questions 51 to 54: The following table gives the price per kg (in Rs.) of a commodity sold in various towns listed below. The table also includes data about distance of these towns from New Delhi.

	Bhagalpur	Lucknow	Agra	Allahabad	Shimla	New Delhi
Rice	105	135	120	75	90	150
Wheat	45	42	60	90	75	75
Maize	60	66	51	72	75	69

Barley	45	30	24	36	42	51
Corn	120	126	117	99	90	150
Distance from New Delhi (in Kms)	600	700	800	1000	1200	-

Cost of transport per 100 kgs = Rs.3 per km

51. If a person in New Delhi had to buy 50kg each of wheat and maize from one place, which would be the most cost-effective place, given that both items can be transported together?

(a) New Delhi

(b) Lucknow

(c) Agra

(d) Bhagalpur
52. What is the highest percentage change exhibited for any commodity in terms of it's price in Bhagalpur as against it's price in any other town/city?

(a) 43%

(b) 60%

(c) 80%

(d) 100%
53. If Cheap and Best store, a supermarket in New Delhi were to get 100 kgs each of all commodities from all the towns listed and sell at New Delhi prices, then on what commodity does it earn the highest percentage of profits (ignore cost of transport)?

(a) Barley

(b) Rice

(c) Corn

(d) Maize
54. If a family in Bhagalpur consumes equal quantities of all these commodities every month, then a shift to which town results in maximum percentage change in the family's average monthly expenditure on these 5 commodities?

(a) Lucknow

(b) New Delhi

(c) Bhagalpur

(d) Shimla

Directions for Questions 55 and 56: Answer the questions based on the following information. The following data was observed from a study of car complaints received from 180 respondents at Amruti's workshop viz., engine problem, transmission problem or mileage problem. There was no one who faced exactly two of these problems. There were 90 who faced engine problems, 120 who faced transmission problems and 150 who faced mileage problems.

55. How many of them faced all the three problems?

(a) 30

(b) 60

(c) 90

(d) Cannot be determined
56. How many of them faced either transmission problems or mileage problems?

(a) 30

(b) 90

(c) 180

(d) Cannot be determined

Directions for Questions 57 and 58: Refer to the table below and answer the questions that follow:

LIC's business pattern

Class of business	2019-20	2020-21	2021-22
Individual assurances	85.5%	88.4%	88.4%
Group assurances	7.6%	6.3%	5.8%
Individual pensions	4.6%	1.0%	1.8%
Group pensions	2.3%	4.3%	4.0%
Total premium income	4,489	22,977	27,851
(In rupees crores)			

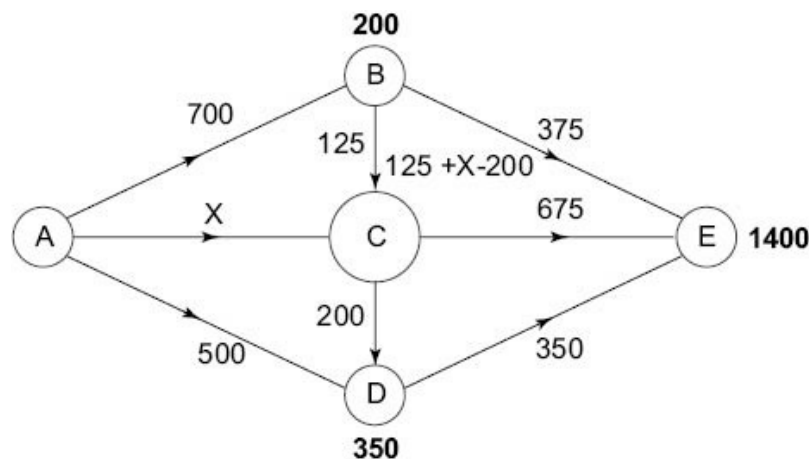
57. The approximate percentage increase in Individual assurances from 2019 to 2022 was (approximately)?

- (a) 560% (b) 660%
(c) 535% (d) 635%

58. Between the years 97-98 to 98-99 the lowest percentage change has been for:

- (a) Individual Assurances
(b) Group assurances
(c) Individual pensions
(d) Group pensions

Directions for Questions 59 and 60:



In the network diagram above, the figures represent the flow of Natural Gas through pipelines between major cities A, B, C, D & E (in suitable units). Assume that supply equals demand in the network (although not on individual nodes).

59. What is the number of units demanded at B?

- (a) 175 (b) 200
(c) 225 (d) 250

60. If the number of units demanded in C is 225, what is the value of x ?

- (a) 975 (b) 875

Answer Key

1. (b)	2. (b)	3. (b)	4. (c)
5. (a)	6. (a)	7. (b)	8. (a)
9. (a)	10. (b)	11. (c)	12. (c)
13. (b)	14. (c)	15. (a)	16. (c)
17. (a)	18. (c)	19. (d)	20. (c)
21. (a)	22. (c)	23. (b)	24. (c)
25. (d)	26. (a)	27. (a)	28. (b)
29. (d)	30. (b)	31. (c)	32. (c)
33. (c)	34. (d)	35. (b)	36. (d)
37. (b)	38. (c)	39. (b)	40. (c)
41. (d)	42. (d)	43. (a)	44. (a)
45. (c)	46. (b)	47. (d)	48. (a)
49. (a)	50. (d)	51. (d)	52. (d)
53. (a)	54. (b)	55. (c)	56. (b)
57. (a)	58. (c)	59. (b)	60. (a)

Solutions

Section I

Solutions to Questions 1 and 2:

- Option (b) [clearly option b provides a legitimate point which could weaken the argument and give a reason as opposed to the one given in the argument.]
- Option (b) [Since he emphasises about the end of the semester, hence it is clear that earlier students were doing it before the end]
- Option (b) [we are talking about exceptions here in the case of achievers being few, so ‘less’ is the correct option.]
- Option (c) [the correct answer is closest in meaning to the phrase ‘Equivalent in effect or value’. Thus ‘tantamount to’ is the best choice.
- Option (a) [the sentence D is the correct one, all others are grammatically incorrect]
- Option (a) [all the others are incorrect]

7. Option (b) ADEBC
8. Option (a) ECBDA
9. Option (a) CABD
10. Option (b) [Clearly the first paragraph suggests that for human beings, it is only sight that matters.]
11. Option (c) [The link can be easily found out as before this phrase, the author is talking about the world.]
12. Option (c) [that is inferred by the usage]
13. Option (b) [The first line of this passage depicts this answer.]
14. Option (c) [This is an indirect question and the answer lies in the first paragraph, last line.]
15. Option (a) [that he thinks is the only solution. This is given in the fifth para, first line itself, it means that we need to go into the tenets of Gandhian economics.]
16. Option (c) it is a direct question given in the first para, second line.
17. Option (a), nowhere in the passage it is given that in bureaucracy, customer plays an important role, as per the first Para, fourth line ,this is not true.
18. Option (c) in the second and third paragraphs, the author is clearly telling about the deficiencies in democracy.
19. Option (d) [very clearly the author's wish]
20. Option (c) as per the last paragraph, last line the option should be (c).

The following structure would emerge for the three bikes:

Enfield	Honda	TVS
B Z'	A' M' D	C' L
Executive Psychologist	Psychologist, Executive, Designer	Designer, psychologist

The answers are:

21. Executive. Option (a) is correct.
22. On the TVS. Option (c) is correct.
23. Z, L and A represent the three psychologists. Option (b) is correct.
24. CFB is not logical because we do not know that Aishwarya is a girl. ADE is the most logical sequence.
25. Option (d) is correct as we cannot conclude upon any of the three options.
26. Using statement (I) we can clearly answer the question but with statement (II) we cannot answer the question. Hence, Option (a) is the correct answer.
27. From Statement II alone we know that Australia has the least chance of winning as per the opinion poll being referred to. Hence, Option (a) is correct.
28. He will stop at the blue mark as per the first statement. Also, the second statement alone is

also sufficient as from it we know that the number of steps he must have taken is odd (and he can only reach the blue mark in an odd number of steps.). Hence, Option (b) is correct.

29. Option (d) as we cannot answer the question even if we use both the statements together.

Solution to Question 30:

Given that A, C, and D have to be separate and that A is Quants, and C cannot be on the last day. Also that there are 3 lectures (at least) on day 1, the order of A, C and D must be

Day 1	Day 2	Day 3
A	C	D

Further B cannot be clubbed with A or D, hence must be on the second day. Thus F must also be on the same day. This gives us the following table.

Day 1	Day 2	Day 3
A	C	D
	B	
	F	

This leaves us with G, H and E. Since, Day 1 has to have at least 3 lectures, G and H must be on day 1. This leaves us with E, which can be placed on either day 1 or 2 or 3.

Thus, the final table is :

Day 1	Day 2	Day 3
A, G, H, E?	C, B, F, E?	D, E?

Hence the answers are:

30. G, H. Option (b) is correct.

Section II

31. The alphabets have to be arranged by selecting 2 from 26 and arranging them. Also, 2 digits out of 10 digits have to be arranged ${}^{26}P_2 * {}^{10}P_2 = 58500$.

Hence, Option (c) is correct

32. The highest number which satisfies the given condition = $99 + 79 + 59 = 237$

And for minimum number $x + x + 20 + x + 40 \geq 100$.

$$x \geq 13.33$$

$$x = 14 \text{ and the number will be } = 102$$

Thus, 14 £ x £ 59

$$\text{fi Total such numbers} = 59 - 14 + 1 = 46$$

Option (c)

33. Let the required distance be x km.

Then the difference between time taken @ 5kmph & @ 6kmph is 12 minutes i.e. $\frac{1}{5}$ hour.

Therefore $X/5 - X/6 = 1/5$

$$6x - 5x = 6$$

$$x = 6 \text{ km.}$$

Hence, Option (c) is correct.

34. $F(8, 4) = f(7, 8) = f(6, 12) = f(5, 16) = f(4, 20) = f(3, 24) = f(2, 28) = f(1, 32) = f(0, 36)$

$$F(0, 36) = 36^2 - 1 = 1295$$

Hence, Option (d) is correct.

35. $F(5, 7) = f(0, 27) = 27^2 - 1 = 728$

$$F(3, 8) = f(0, 20) = 20^2 - 1 = 399$$

$$F(5, 7) + f(3, 8) = 728 + 399 = 1227$$

Hence, Option (b) is correct.

36. New speed = $\frac{5}{6}$ of the usual speed.

Therefore new time taken = $\frac{6}{5}$ of the usual time

Therefore $(\frac{6}{5} \text{ of usual time}) - (\text{usual time}) = 15\text{min.}$

Therefore $\frac{1}{5} \text{ usual time} = 15\text{min}$ OR usual time = 75 min.

Hence, Option (d) is correct.

37. No. of signals using one light = ${}^4P_1 = 4$

$$\text{No. of signals using two lights} = {}^4P_2 = 12$$

$$\text{No. of signals using three lights} = {}^4P_3 = 24$$

$$\text{No. of signals using four lights} = {}^4P_4 = 4! = 24.$$

Total = 64 signals. Hence, Option (b) is correct.

38. D, E and F are the mid points of AC, BC and AB.

Ratio of area of shaded to unshaded = 1:1

Hence, Option (c) correct.

39. $b(x+1)^2 + c(x+1) + d - bx^2 - cx - d = 8x + 3$

$$2bx + b + c = 3$$

$$2b = 8, b + c = 3$$

$$b = 4, c = -1$$

Hence, Option (b) is correct.

40. Area of triangles subtended by intersection of diagonal of a parallelogram is always equal.

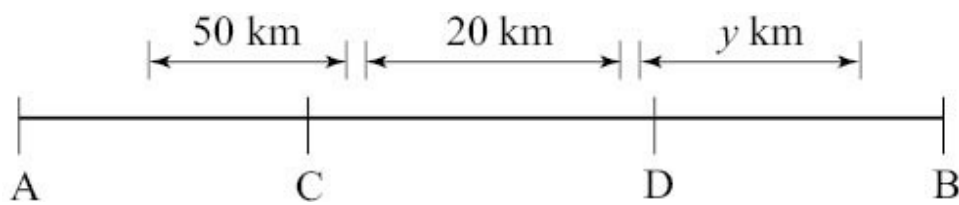
Here in the above figure area of shaded region = 2. Triangle's area

And in above parallelogram there are 8 triangles

Hence ratio of shaded part = $\frac{1}{4}$

Hence, Option (c) is correct.

41. Let the speed be x km/hr



When the bus travels with its usual speed throughout, it reaches 45 minutes earlier than after reducing the speed to $\frac{4}{5}$ th after 50 kilometres.

When the bus travels with its usual speed throughout, it reaches 33 (45 – 12) minutes earlier than after reducing the speed to $\frac{4}{5}$ th after 70 kilometres.

When the speed becomes $\frac{4}{5}$ th of the usual, time taken would become $\frac{5}{4}$ th the usual, i.e. $\frac{1}{4}$ th more of the usual time.

So, $\frac{1}{4}$ th of the usual time taken to travel CB = 45 min.

$\frac{1}{4}$ th of the usual time taken to travel CD (i.e. 20 km) = 12 min.

Usual time to travel 20 km. = 48 min.

Usual Speed = $20 \div \frac{48}{60} = 25$ km/hr

Usual time taken to travel CB = $45 \div \frac{4}{5} = 3$ hrs

Distance CB = $25 \times 3 = 75$ km.

Total distance = $50 + 75 = 125$ km.

Hence, Option (d) is correct.

42. D £ 0

$$64(a + 5)^2 + 64(7a + 5) \text{ £ } 0$$

$$a + 17a + 30 \text{ £ } 0$$

$$-15 \text{ £ } a \text{ £ } -2$$

$$\text{Probability} = \frac{13}{20}$$

Hence, Option (d) is correct.

43. The only possible 4 digit numbers divisible by 3 can be formed by using the digits 1, 2, 4 and 5.

Each of 1, 2, 4 or 5 will occur $3!$ times in the units place, tens place, hundreds place or thousands place.

\ If we add the digits in units place we get $6 \div 5 + 6 \div 4 + 6 \div 2 + 6 \div 1 = 6 \div 12 = 72$. Similar would be the case for the sum of the tens place, the hundreds place and the thousands place.

$$\text{\ The required sum} = 72000 + 7200 + 720 + 72 = 79992$$

Option (a) is correct.

$$44. F(x + 1) + f(x - 1) = f(x) \quad (1)$$

Putting $(x + 1)$ at the place of x

$$F(x + 2) + f(x) = f(x + 1) \quad (2)$$

$$\text{Adding, 1 and 2, we get } f(x + 2) + f(x - 1) = 0$$

$$\text{Similarly, } f(x + 3) + f(x) = 0$$

$$\text{or, } f(x + 4) + f(x + 1) = 0$$

$$\text{or, } f(x+5) + f(x+2) = 0$$

$$\text{or, } f(x+6) + f(x+3) = 0$$

$$\text{Now replacing } f(x+3) \text{ by } -f(x), f(x+6) + f(x+3) = f(x+6) - f(x) = f(x+6) - f(x) = 0$$

$$\text{So, } N = 6$$

Hence, Option (a) is correct.

45. All the terms except $2!$ will be factors of 3.

$$4! = 4 \times 3 \times 2 \times 1, 6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1$$

$$\backslash 2! = 2 \times 1 = 2$$

Hence, Option (c) is correct.

46. In three hours the two bikes cover 210 km. Hence, the sum of speeds must be 70 kmph and the slower bike's speed would be 30 kmph.

Hence, Option (b) is correct.

47. Total no. of ways = $6!/(2! \times 2!) = 180$. Hence option (d) is correct.

$$48. 2\log_5 a - \log_a 1/25 = 2\log_5 a - \frac{\log_5 5^2}{\log_5 a}$$

$$2\log_5 a + 2/\log_5 a = 2[\log_5 a + 1/\log_5 a]$$

$$\text{Since } x \geq 1 \text{ fi } \log_5 a > 0$$

But since $AM > GM$.

$$\frac{\log_5 a + 1/\log_5 a}{2} \geq \log_5 a \times 1/\log_5 a$$

$$\log_5 a + 1/\log_5 a \geq 2$$

$$2(\log_5 a + 1/\log_5 a) \geq 4$$

$$\text{For } a = 5$$

$$2(\log_5 a + 1/\log_5 a) \geq 4$$

Hence the least value of $(\log_5 a - \log_a 1/25)$ is 4

Hence, Option (a) is correct.

49. There will totally be 52 letters out of which 'm' is the 39th letter. If we count from A, in the first round the letter removed will be those positioned in the slots of.

5, 10, 15.....50, 10 letters, then

3, 8, 13.....48, 10 letters, then

1, 6, 11..... 51, 11 letters, then

4, 9, 14, 19, 24, 29, 34 – 7 letters before 39 total number of letter struck off is $10 + 10 + 11 + 7 = 38$ letters before 39 fi 50, m is the 39th letter to be removed.

So, 13 letters are left in their slots.

Hence, Option (a) is correct.

50. Angle $ABC = 90^\circ$ so angle $ABE = 90 - 65 = 25^\circ$

Angle ABE = Angle ACE = 25°

And angle ACD = DEC = 25°

Hence, Option (d) correct

51. Cost in New Delhi = $72 \text{ ₹ } 100 = 7200$

Cost from Lucknow = $54 \text{ ₹ } 100 + 2100 = 7500$

Cost from Agra = $55.5 \text{ ₹ } 100 + 2400 = 7950$

Cost from Bhagalpur = $52.5 \text{ ₹ } 100 + 1800 = 7050$. Hence, Option (d) is the correct answer.

52. Highest change in Wheat will be from 45 to 90. Hence, 100%. Option (d) is correct.

53. Here the cost of transport need not be considered as all the commodities will have to bear this cost.

Average price of Barley from the 5 towns = $177/5 = \text{Rs.}35.4$. Profit of the supermarket will be Rs.15.6. Percentage profit 44%

Average price of Rice in 5 towns is Rs.105, profit of supermarket is Rs. 45. Percentage profit 42.8%.

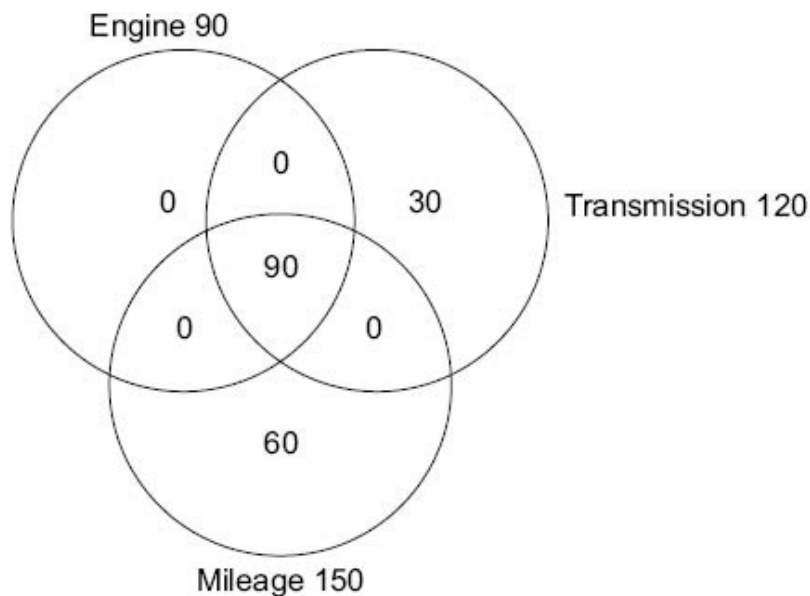
Average price of Corn is 110.4, profit is Rs.39.6. percentage profit is less than 40%

Average price of Maize is Rs. 64.8. profit is Rs.4.2 and the percentage profit is less than 10%

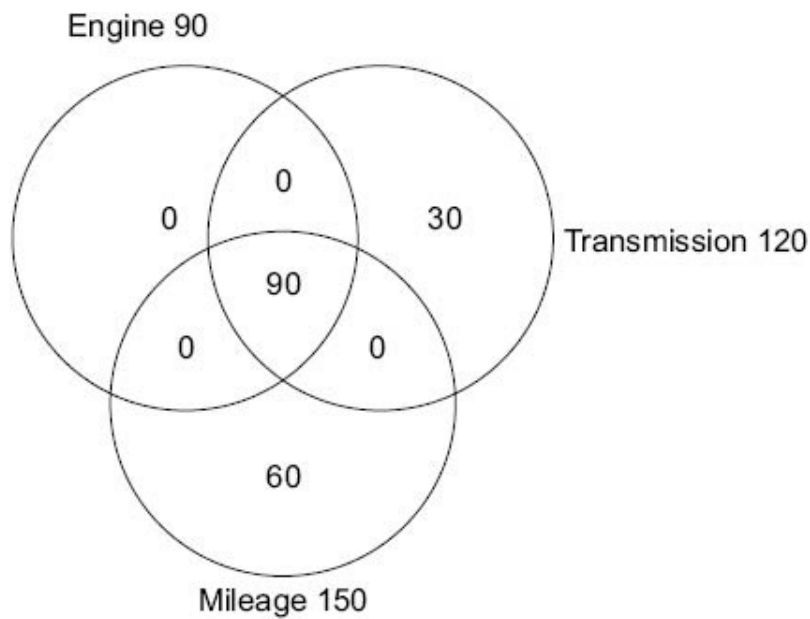
Hence profits are highest from barley. Hence option (a) is the correct answer.

54. A shift to New Delhi would create the highest percentage increase in average monthly expenditure on the 5 commodities. Hence, Option (b) is the correct answer.

55. Option (c)



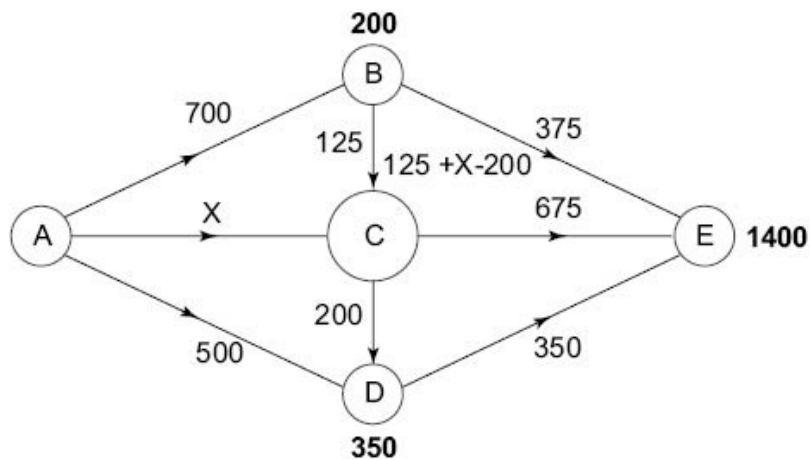
56. There are 90 such people. Option (b) is correct.



57. $100 \times 1.855 \times 1.884 \times 1.884 = 658$. Thus, $658 - 100 = 560$ % approximately. Hence, Option (a) is correct.

58. It is clearly for individual pensions.

Refer to the following figure for the solution:



Hence, Option (c) is correct.

59. From the figure it would be $700 - (375 + 125) = 200$. Hence, Option (b) is correct.

60. $125 + X - 200 - 675 = 225 \Rightarrow X = 975$. Hence, Option (a) is correct.