7 Data Sufficiency

Introduction

Data sufficiency is an important concept for competitive exams, especially XAT and GMAT. This chapter requires a thorough understanding of the concepts of arithmetic, algebra, geometry, and logical reasoning.

Understanding Sufficiency

The data sufficiency problem consists of a question followed by two statements, labelled as statements (I) and (II), in which certain data are given. One has to decide whether the data given in the statements are sufficient for answering the question. Using the data given in the statements plus your knowledge of mathematics and everyday facts (such as the number of days in July or the meaning of counter-clockwise), you must indicate whether,

(A) Statement (I) *alone* is sufficient, but statement (II) alone is not sufficient to answer the question asked.

(B) Statement (II) *alone* is sufficient, but statement (I) alone is not sufficient to answer the question asked.

(C) Both statements (I) and (II) *together* are sufficient to answer the question asked but neighter statements *alone* is sufficient.

(D) Each statements *alone* is sufficient to answer the question asked.

(E) Statements (I) and (II) *together* are not sufficient to answer the question asked, and additional data specific to the problem is needed.

Data sufficiency questions focus on whether a statement is sufficient to answer the question. A statement is sufficient when it guarantees exactly one answer to that question.

Example 1:

Is integer x positive?

The statement '$x > 9$' would be sufficient, as any number greater than 9 is also greater than 0 and therefore positive.

The statement '$x^2 > 81$', however, would not be sufficient, as there are two potential values of x: 9 (which gives the answer 'yes, x is positive') and –9 (which gives the answer 'no, x is not positive').

Here one has to determine when a statement is sufficient to provide exactly one answer to the overarching question. Let's try one more question.

Example 2:

What is the volume of cube W?

Statement: Cube W has a surface area of 96 square inches?

Solution:

The given statement is sufficient because all sides of a cube are the same, a cube with a surface area of 96 will have six equal sides with an area of 16, meaning that each side has a length of 4 and a cube with a side of 4 has a volume 4^3, which is 64 because this statement provides exactly one answer to the question—the cube has a volume of 64—the statement is sufficient.

OMET Mantra

A statement is sufficient when it guarantees exactly one (and only one) answer to the question.

This means that in a yes/no question, you have sufficient information if the answer is 'definitely yes' or if the answer is 'definitely no'. You do not have sufficient information when the answer is 'sometimes yes but sometimes no' (or 'may be').

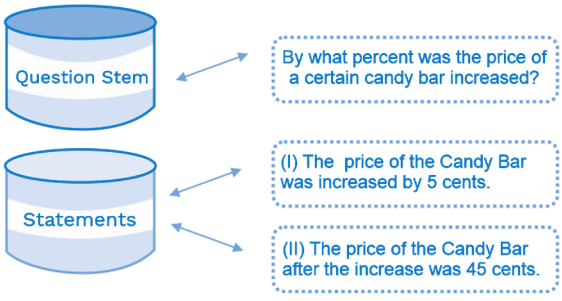
This means that in a 'what is the value?' question, you have sufficient information when you can pin down exactly one value for the question, but you do not have sufficient information when more than one value is possible.

Anatomy of a Data Sufficiency Question

Data sufficiency questions are structured in the same way, with three key elements: the question stem (which may or may not certain important facts), the statements (always two statements), and the answer choices (which may be 4 or 5).

Consider this example to see what a data sufficiency question looks like!

Example 3:



(A) Statement (I) alone is sufficient, but statement (II) alone is not sufficient.
(B) Statement (II) alone is sufficient, but statement (I) alone is not sufficient.
(C) Both statements together are sufficient, but neither statements alone is sufficient.
(D) Each statement alone is sufficient.
(E) Statements (I) and (II) together are not sufficient.

Solution:

The question asks, 'What is the percentage increase in the price of a candy bar?'

Statement (I) provides the price change but offers no way to get the original price, and hence, we can't calculate the percentage change. So statement (I) is not sufficient. This means that one can eliminate choices (A) and (D), leaving only (B), (C), and (E).

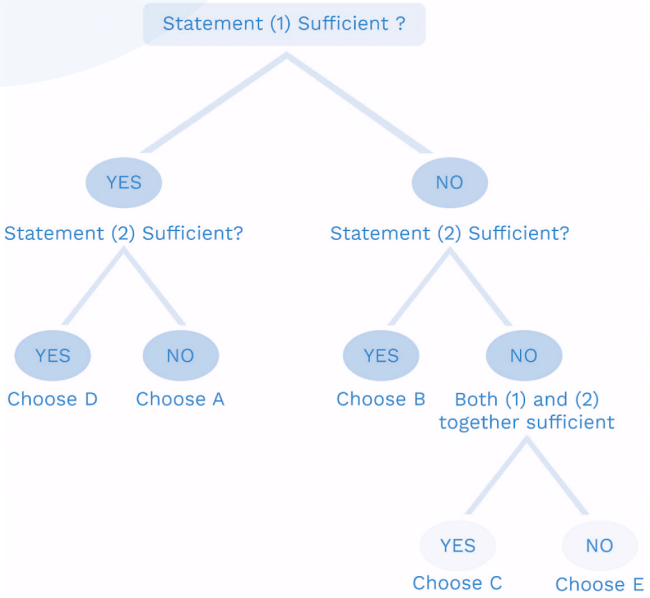
Statement (II) provides the new price but does not (alone) provide any data about the original price. So, we can eliminate choice (B), leaving only (C) and (E).

When we combine the information given in both the statements, we can say that the original price was 40 cents and it increased by 5 cents. So, the percentage increase is

$$\frac{5}{40} \times 100\,\% = 12.5\%$$

So, the answer option is (C).

Now, let's look at the approach to solve the data sufficiency question in a decision tree form.



Example 4:

Directions for Questions 1 to 4: Read the instructions carefully and answer the question below.

(A) Question can be answered by (I) alone.
(B) Question can be answered by (II) alone.
(C) Question can be answered with (I) and (II) but not with either alone.
(D) Question cannot be answered with both (I) and (II).

1. Y is a three-digit number represented by abc such that b = 2a + c. Find Y.
(I) $b = c^2$
(II) a = c

Solution: (C)

Assuming statement (I) we have $b = c^2$, hence, the set of values for (b, c) = (0, 0), (1, 1), (4, 2), (9, 3).

Given data, b = 2a + c, on solving, the cases (0, 0) and (1, 1) can be eliminated and the three-digit number are 142 and 393.

Assuming statement (II),

a = c and b = 2a + c

→ b = 3c, Hence the three-digit numbers will in the format (a)(3a)(a). The possible three-digit numbers are 131, 262, and 393. Combining both statements (I) and (II), one can unequally determine the three-digit number at 393.

Hence, option (C) is correct.

2. Rohan was born in 1992 on a date when the day and month numbers were equal. When will be his birthday if
(I) He was born in a Month with 30 days.
(II) The product of month and day numbers is divisible by 12.

Solution: (C)

There are 12 possibilities (1, 1) ..... (12, 12)

With statement (I), only four possibilities are there. (April: 4; June: 6; September: 9; November: 11).

From statement (II), the number of possibilities are just two: (June: 6 and December: 12).

When information in both statements is combined, we get June 6 as the answer.

Hence, option (C) is correct.

3. A two-digit number K is such that the sum of its digits is equal to 10. Find K if:
(I) The unit's digit of K is a perfect square.
(II) K is a perfect square.

Solution: (B)

The possibilities are 19, 91, 28, 82, 37, 73, 46, 64, 55.

From statement (I), the possibilities left are 19, 91, and 64.

From statement (II), the only number possible is 64.

Hence, the question can be answered by B alone.

So, option (B) is correct.

4. John went to the market and bought 3 lemons, 4 potatoes, and 6 tomatoes for ₹50. Find the price of a lemon if
(I) 1 lemon, 2 potatoes, and 3 tomatoes cost ₹24.
(II) 2 lemons, 3 potatoes, and 3 tomatoes cost ₹31.

Solution: (A)

Let l be lemon, P be potato, and f be tomato.

Hence, 3l + 4p + 6f = ₹50.

From statement (I)

1l + 2p + 3f = 24 ... (i)

Multiplying equation (i) by statement (II), we get

2l + 4p + 6f = 48

Subtracting this from the first equation, we get l = 2.

Hence, statement (I) alone is enough.

Example 5:

Read the instructions carefully and answer the question below.

(A) Both the statements are necessary to answer the question.
(B) Both the statements are not sufficient to answer the question.
(C) Each of the statements alone can answer the question.
(D) Only one statement is sufficient to answer the question but not the other.

5. Find the value of (a - c) if it is given that
(I) 3a + 5b + 7c = 23
(II) 17a + 15b + 13c = 77

Solution: (A)

On rearranging the equation in statement (I), 3 (a + b + c) + 2 (b + 2c) = 23.

On rearranging the equation in statement (II), 17 (a + b + c) – 2(b + 2c) = 77.

From these two equations, the values of (a + b + c) and (b + 2c) can be obtained and then by subtracting these two equations, will get (a – c).

Decision-Making

The decision-making section of the XAT tests a candidate's EQ more than his IQ. It presents short and long cases involving different behavioural, reasoning, and management situations. A student has to use his acumen, consider the options, weigh the pros and cons, stick to ethics, and thus make the best decision that will sound balanced.

Decision-Making Section Structure

Combination of decision making and DI/LR problems.

- Graph
- Bar Chart
- Pie Charts

Types of Decision-Making

- Ethical dilemmas
- Organisation behaviour/HR issues
- Strategy/operations
- Personal/behavioural
- Miscellaneous

Types of DI-LR

- Categorisation
- Maximisation/minimisation LR sets
- Profit, loss, and interest
- Shares and investment, breakeven
- Team selection

Decision-making is not merely a test of theoretical knowledge. It is a test of ethics, thinking patterns, and the ability to solve real-life problems. For example, if there is a dispute between two employees in the same organisation, how would a manager deal with it and resolve it in such a way as to make it a win-win situation?

Skills Tested in Decision-Making

1. **Critical reasoning:** Critical thinking forms an integral part of decision-making skills. As a manager, one should know a good assumption from a bad one. He should also have a clear understanding of logical fallacies, which will help him strengthen or weaken his arguments.
2. **Logical reasoning:** A manager should also possess logical and reasoning skills. He should know things such as maximising profit, team building, and team selection.
3. **Managerial skills:** This is the most important skill required in decision-making. A manager should be able to shoulder responsibility, lead from the front, set examples, think on his feet, and be accountable. Then, he has to make decisions which will help him achieve organisational goals.
4. **Data interpretation skills:** Data Interpretation Skills help a person analyse shares and Investment, break-even point, variable cost per unit, fixed cost per unit, etc.

Decision-Making Framework

1. What is legally allowed?
2. What is best aligned with the objectives/values of the organisation?
3. Which option is likely to be most effective?
4. What is ethical/fair?
5. What is the core issue, and how to address it?
6. What additional information would help in deciding?

These are the critical points that one should keep in mind while making any decision.

Things to Avoid!!!

1. Knee-jerk reactions
2. Extreme reactions
3. PR nightmares
4. Counterproductive measures
5. Measures not aligned with a problem statement
6. Discriminatory/unethical/immoral
7. Incorrect reasoning/reasoning fallacies

Example 6:

Jack runs a company with over 2,000 employees. Ashok is one of the company's product managers and has been working with Jack since the company was founded. Due to Jack's trust in Ashok, Ashok handles the company's finances. Of late, there have been rumours that Ashok has been siphoning off some money. Jack decides to find out the truth and finds, to his shock, that the rumour is true. Ashok was indeed misusing the company funds.

Which of the following actions should Jack adopt in the given situation?

(A) Fire Ashok with immediate effect and file a case against him.
(B) Suspend Ashok till he pays back the funds that he siphoned off.
(C) Warn Ashok of the dire consequences and let him continue with his job.
(D) Transfer Ashok to a department where he cannot handle the finances.
(E) Appoint an auditor to ensure that Ashok does not mishandle the funds from now on.

Solution: (A)

It is given in the question that it has been beyond doubt that Ashok has been mishandling funds. Options (C), (D), and (E), therefore, do not correctly respond to the severity of the crime. The person's integrity has gone under fire and hence, he cannot be warned, transferred, or monitored. Irrespective of where he is posted, there is a possibility that the person might indulge in unethical activities again, therefore we can eliminate these options.

Option (B) suggests suspending Ashok till he pays the amount back. This option shifts the concern to the amount siphoned off and does not place much emphasis on the breach of trust (which is a bigger concern) that has taken place. Also, option (B) will send out a wrong message to others that they can siphon off funds and pay back if they are getting caught.

Ashok should be terminated from his job and legal proceedings should be undertaken so that both the amount gets recovered and an example can be set for others. Therefore, option (A) is the right answer.

Decision-Making – Ethical Dilemma

Ethics is knowing the difference between what you have a right to do and what is right to do. A moral (ethical) dilemma involves choosing between two or more moral (ethical) values, and in making that decision, you will compromise or violate some other moral (ethical) principle(s) or value(s).

The ethical dilemma is a vital section of decision making where ethics are tested. A hypothetical situation is given where a person acts as a manager, businessman, politician, etc. He has to make an ethical decision and prove his values.

Things to Avoid!!!

1. **Unethical choices:** Unethical choices should be avoided. For example, if a person X is working as a public servant, then taking or giving a bribe is completely unethical.
2. **Extremes solution:** If two goals are contradicting each other, there should be a balancing act between them. Suppose a person X has two goals A and B. So, while taking a decision he cannot avoid either of them completely. His ethical decision should be in such a way there should be a win-win situation for him.
3. **Irrevocable measures:** While taking a decision one should avoid irrevocable measures. For example, as an education inspector, if a person X files a case against the school to shut it down then he cannot undo it. He cannot do anything to fix it or resolve the issue. Therefore, he should avoid such countermeasures.
4. **Ineffective actions:** While taking a decision, one must focus on the goals that one has listed. If he has taken some decision but it has no effect on his goals which he has listed down, then these are ineffective actions.
5. **Win-loss situation:** Suppose person X has two primary goals, and he has taken a decision which is a win for one goal but a loss for another goal, then he must avoid it. His decision should be a win-win situation for both goals.

Define the Problem

In an ethical decision, the essential step is to define the problem very well. Let's understand this situation with an example. Suppose a person X is the education Inspector of a primary school, and he has to check the standards of the primary school. There are two core goals that he can define.

1. **Safeguarding the students of the school:** The goal will ensure that the school's infrastructure is good and students are not in danger sitting in the classroom.
2. **Ensuring that students continue to get access to education:** If this is the only primary school in that locality, he has to make sure that he cannot take a drastic decision to shut down the school because of bad infrastructure or incompetent teachers.

So, he has to make sure that students continue to get access to education.

The challenge in defining the goals is that there can be multiple goals, and also, the goals can be contradictory; but when one has to make a decision, one should ensure that both goals are met; he cannot go for an extreme decision.

Key Points

- Identify stakeholders
- Identify key issue
- Option elimination
  - (That does not address key issue)
  - (Illegal/unethical/unfair)
  - (Empathetic view)

Strategic Decisions

Organisational and Strategic Decisions

1. Define the goal: Whenever someone has to take strategic decisions, the most important thing is to define the goal. For example, if person X is a businessperson, his primary goal is to check profitability.

2. Define the constraints: Once the goal is defined, the challenge is to determine the constraints. For example, if X is planning to set up a cement factory, it requires lots of capital, heavy machinery, high skilled labour, and above all, he has to see the market size.

3. Identify ways to overcome constraints: The next thing X has to keep in mind is to find ways to overcome constraints. For example, setting up a cement factory will require lots of land. So, the idea is to select an area outside the city to lower the expenses.

4. Choose the option that achieves the goal within the constraints: Here X can eliminate those options that do not much affect the goal. For example, for setting up a cement factory, if someone is planning to launch an awareness programme to motivate others to follow suit, which actually does not help much to achieve the goal.

Evaluating a Business Opportunity

It is crucial to evaluate and analyse different business opportunities. It can be again divided into two parts.

Key Points

Ordering facts

1. Identify the problems.

2. Identify the result state.

3. Identify the assumptions.

Evaluating Expansion Plans

A manager with a vision will definitely go ahead with expansion plans. But a careful analysis of those plans is necessary.
For example, suppose person X is a builder in Hyderabad and plans to set up a business in Delhi. In that case, he has to analyse the situation deeply about competitors, restrictions, raw materials supply, etc., in Delhi.

Human Resource Decision-Making

Human-based decision making is a good test of a person's people skills.

Every year, one set of HR-based decision-making can be expected in the XAT.

Organisational Behaviour

Concept : The concept of organisational behaviour deals with the dynamic relationship between the performance of a group and a person. In addition, it deals with the impact of human behaviour on professional aspects of their life.

Essential Parameters of Organisational Behaviour

1. Legal
2. Company objectives
3. Ethical and fair
4. Anti-discriminatory
5. Transparent and well-communicated
6. Aligned with what is suitable for company co-operation

Human Resources Issues

1. Weed out anything unethical where company policies/goals are concerned.
2. Filter and analyse organisational behaviour policies.
3. Align all major decisions with company goals.
4. Avoid taking extreme/irrevocable steps.
5. Constitute a fact-finding body.
6. Trust evidence, not rumours.
7. Treat all employees with fairness.

Practice Exercise

Level of Difficulty – 1

Directions for Questions 1 to 5: Read the instructions carefully before answering the questions.

(A) The question can be answered by using statement (I) alone but not by using statement (II) alone.

(B) The question can be answered by using statement (II) alone but not by using statement (I) alone.

(C) The question can be answered by using either statements alone.

(D) The question can be answered by using both the statements together but not by using any statement alone.

(E) The question cannot be answered by using both statements together.

1. What is Rishabh's rank in the class from the top?
Statement (I): There are 9 students whose ranks are better than that of Rishabh.
Statement (II): There are 23 students whose ranks are worse than that of Rishabh.

2. What is the income of Kelvin?
Statement (I): Kelvin's income is 15% more than that of Rylo.
Statement (II): Rylo's income is 20% less than that of Sandra.

3. What is the total sales revenue of company ABC in 2002?
Statement (I): Company ABC has only one product X.
Statement (II): The number of units of product X sold in 2002 was 2,500 and the selling price of each unit was ₹100.

4. What is the fifteenth day of the month?
Statement (I): The last day of the month is Friday.
Statement (II): The number of days in this month is a multiple of 4 and the first day of the month is Sunday.

5. Is Y an integer?
Statement (I): y^3 is an integer.
Statement (II): 3y is an integer.

Directions for Questions 6 and 7

ICT is a body that manages the international affairs of cricket. There are 10 permanent and 20 associate members of ICT. BCCT is a body that manages cricket in India. Out of the total revenues of the ICT, 40% comes from BCCT. Five permanent members of ICT want to host the next cricket world cup. ICT wants to have a lucky draw to decide who will host the world cup. However, BCCT is threatening to back out from the tournament if it is not given the chance to host the tournament. If BCCT opts out of the tournament, it will lead to huge financial losses for ICT.

6. What could be ICT's best course of action in such a scenario?

(A) Go ahead with their plan even if BCCT threatens to opt-out.

(B) Discuss it with other board members and try to convince them to host further events but not this one.

(C) Ask all the boards to boycott BCCT. This would pressurizes BCCT to agree to ICT.

(D) Conduct a meeting of all boards and try to see if a consensus can be arrived at. If not, then go ahead with what the majority supports.

7. The ICT is planning an international tournament in April-May. However, BCCT hosts its T-20 Tournament CPL during the same window. So BCCT requests ICT to re-schedule the international

tournament. Which of the following is likely to convince ICT to re-schedule the tournament?

(A) Most of the players who play in the CPL also play for their countries.
(B) BCCT will reduce the funds that it gives to the ICT.
(C) BCCT cannot re-schedule the CPL from the calendar for further months is packed.
(D) BCCT re-scheduled CPL the previous year on ICT's request.

8. There is a conflict between India and Pakistan due to which the cricket boards of the two nations decide not to play against each other. However, India Pakistan match is very popular and generates 10 times the revenue in comparison to any other match. Which of the following reasons given by ICT will convince both the boards to play against each other?

(A) 80% of the revenues generated from the match will be distributed among the two boards.
(B) Play the match at a neutral venue so that the players should feel safe.
(C) Play with each other only at international events.
(D) Cricket would promote goodwill between the two countries and will help to improve the relations.

Directions for Questions 9: Read the caselet carefully and answer the questions below.

For 2 years, Bose has been working in a software company, Info Software Pvt Ltd as a Software Engineer. Due to the recent death of his father, he is the sole earning member of his family. He is awaiting his promotion to a senior software engineer as the improved pay would make the financial position of his family better. Bose reports to his manager Anil, who is off late under pressure as his performance review is due and his team has been unable to meet the targets set for this year.

During his time at Info Software, Bose in his free time has developed software that would efficiently streamline the leave processes of all the employees in the company. One day, Bose shared the details of the software in person, with his manager Anil hoping it would make his way clear for a promotion. Anil, after testing the software has found it to be very good and now is thinking of presenting it as his own, in his performance review to make it benefit him. He thinks he can easily convince Bose with his plan by giving him a promotion and also a salary raise of 30%. (XAT 2016)

9. What should the company do to avoid situations like this?

(A) Do not allow employees to work overtime.
(B) Track the day-to-day activities of all employees.
(C) Do not put unrealistic expectations on a team's performance.
(D) None of the above.

Directions for Question 10: Read the caselet carefully and answer the question below.

Amit is recently admitted to St. Joseph International School. There is a boy, named Ganesh in his class who uses his muscle power to intimidate his classmates and who also extorts money and other valuables from them. When the boy approached Amit and asked him to bring cash for him the next day. Amit denied it and said that he would complain to the class teacher. There have been several complaints in the past against the boy but, being the son of one of the trustees of the school, no action has been taken against him.

10. What would be the best course of action for Amit?

(A) Follow what everyone else is doing and give money to Ganesh.
(B) Complain to his parents about Ganesh.

(C) Complain to the class teacher to take strict action against Ganesh.
(D) Threaten Ganesh and warn him of dire consequences if he does not stop his unethical practices.

Directions for Questions 11 to 15: In each of the following questions, two statements have been given. Analyse the given statements and answer whether the data given in the statements are sufficient to answer the question or not.

(A) If the question can be answered by one of the statements alone and not by the other.
(B) If the question can be answered by using either statements alone.
(C) If the question can be answered by using both the statements together but cannot be answered using either statement alone.
(D) If the question cannot be answered even by using both the statements together.

11. Is a two-digit number 'ab' an even number?
Statement(I): a is divisible by 3.
Statement(II): (b + 1) is divisible by 4.

12. Average age of a, b, c, and d is 46 years. Who is the oldest among them?
Statement(I): C is 91 years odd.
Statement(II): Ages (in years) of all of them are distinct natural numbers.

13. Find the mass of the liquid if its volume is 25 cm^3.
Statement(I): Mass of the liquid varies directly with its volume.
Statement(II): The mass of the liquid is 12 gm when its volume is 15 cm^3.

14. What is the profit earned by selling the article?
Statement(I): The article was marked up by 30%.
Statement(II): The cost price of the article is ₹500.

15. By selling a product with 30% profit. How much profit was earned?
Statement(I): The difference between the cost price and the selling price is ₹900.
Statement(II): The selling price is 130% of the cost price.
(A) If statement (I) alone is sufficient, but (II) is not sufficient.
(B) If statement II alone is sufficient, but (I) is not sufficient.
(C) If both statements (I) and (II) are needed.
(D) If each statement (I) or (II) alone is sufficient.
(E) If both of them together are not sufficient.

Level of Difficulty – 2

Directions for Questions 1 to 5: Read the instructions carefully before answering the questions.

(A) The question can be answered by using statement (I) alone but not by using statement (II) alone.

(B) The question can be answered by using statement (II) alone but not by using statement (I) alone.

(C) The question can be answered by using either statements alone.

(D) The question can be answered by using both the statements together but not by using any statement alone.

(E) The question cannot be answered by using both statements together.

1. A set contains 4 unique positive integers whose sum is 40. What is the value of the sum of the squares of all the elements of the set?
Statement (I): The four integers are in an arithmetic progression.
Statement (II): The difference in the squares of the largest and smallest numbers is less than 125.

2. Two buses A and B are headed towards each other. What is the ratio of the speed of bus A to the speed of bus B?
Statement (I): One second before they collide, the buses were 12 m apart.
Statement (II): The speeds of the buses are prime numbers.

3. Raju travels from Hyderabad to Secunderabad at a constant speed and immediately from Secunderabad to Hyderabad at a different constant speed. Is Raju's speed from Hyderabad to Secunderabad greater than 30 kph?
Statement (I): Raju's average speed for the round trip is 60 kph.
Statement (II): Time taken by Raju to travel from Hyderabad to Secunderabad is half an hour more than the time taken by him to travel from Secunderabad to Hyderabad.

4. There are n distinct integers in a set A. Is the median of set A non–negative?
Statement (I): Among all the negative numbers in the set, –1 is the largest number.
Statement (II): Among all the numbers in set A, half the numbers are positive.

5. Is $x = 3$?
Statement (I): $(x - 3)(y - 4) = 0$
Statement (II): $(y - 4) = 0$

Directions for Questions 6 and 7: Read the given information carefully and answer the questions that follow.

Rohit has a very large clothing store for all age groups. The store has a very good reputation for providing good quality clothes. Customers are satisfied as they get the clothes as per the latest fashion trends. However, being situated outside the central hub of the city, the shop is not known to many people. Rohit does not spend money on advertisements. Due to less popularity, Rohit is not making as much profit as he had expected.

6. Which of the following steps should Rohit take to bring in more customers?

(A) Rohit should contact some advertising agencies which can make his shop popular and which are under his budget.

(B) Rohit should modify his shop into a mini super-market selling other products too.

(C) Rohit should offer huge discounts on the clothes.

(D) Rohit should close his shop and start some other profit-making business.

7. After applying some measures, the number of customers has increased in Rohit's shop. However, due to the increase in footfalls, the employees find it difficult to handle so many customers at a time. Also, Rohit does not want to spend much money. Which of the following steps should Rohit take to tackle this situation?

(A) Fire the current employees and hire more skilled employees.
(B) Hire more employees with a similar skill set as the current ones.
(C) Arrange a training programme for the employees so that employees can learn how to handle multiple customers at the same time
(D) Increase the opening hours of the shop.

Directions for Questions 8 and 9: Read the following information carefully and answer the questions that follow.

Chocobar, a chocolate company, was experiencing an increase in sales year after year. People were happy with the products, demand was soaring, and the supply was sufficient. Chocobar produced three types of candies: Milky, Silky, and Nutty. The main consumers of chocolates were children aged under 12 years. Some of the children bought two types of chocolates while some bought only one.

But the head of the product division, Mr. Sunil was confused. The demand for Nutty chocolate was increasing. Their raw material supplier, Wells Cargo wanted to supply lower quality cocoa required for Nutty at a cheaper price.

Although it was profitable for the company to increase production, the management was not happy with the quality of the product. Mr. Sunil met Mr. Katiyar, the chairperson of Chocobar, to discuss this matter. Mr. Katiyar, who is always after higher profits, said that he will organize a meeting with the division heads to oversee the quality issue.

8. Which of the following should Mr. Sunil definitely avoid?

(A) Make no changes to the production of the products.
(B) Halting the production of Nutty till the management comes up with a decision on the quality issue.
(C) Increasing the production of Nutty and asking the supplier to supply better quality raw materials.
(D) Increasing the production of Nutty while stopping the production of other products as Nutty yields more profit.

9. Recently, Mr. Rajori, head of sales department, has been receiving complaints regarding Milky and Silky. He expresses his concerns to Mr. Sunil who then tells him that the division heads have decided to keep producing three products and also increase the price of each. What should Mr. Rajori do?

(A) Launch a campaign to increase awareness about Milky and Silky.
(B) Send an anonymous message to senior management telling them about the dissatisfaction of customers.
(C) Ask the research team to conduct a study to find the reasons for customer dissatisfaction.
(D) Stop the production of Milky and Silky.

Directions for Question 10: Read the caselet carefully and answer the question below.

Mr. Pandey, HR manager of a service-based e-commerce company, has received two complaints of Mr. Sanjay citing his inefficiency at work. So, Mr. Pandey decided to talk to Sanjay regarding his performance and invited Sanjay to his cabin. In their meeting, Mr. Pandey reminded Sanjay that he is very important to the organization and has to perform well to reach the expectations of his colleagues and his manager. And he also mentioned that he will continue to monitor Sanjay's performance and would like to terminate him if continues to perform dismally.

10. Sanjay, after meeting with Mr. Pandey continued to focus on his work instead of getting demoralized. Which of the following might best explain his decision to do so?

(A) Sanjay is getting transferred to another branch of the company.
(B) Failing to perform well in the future might further complicate things.
(C) Mr. Pandey is going to retire soon.
(D) Sanjay doesn't like his job anyway.

11. A spherical ball of a given radius of 7 cm is melted and made into a right circular cylinder. What is the height of the cylinder?

Statement (I): The volume of the cylinder is equal to the volume of the ball.
Statement (II): The area of the base of the cylinder is given.

(A) If statement (I) alone is sufficient, but (II) is not sufficient.
(B) If statement (II) alone is sufficient, but (I) is not sufficient.
(C) If both statements (I) and (II) are needed.
(D) If each statement (I) or (II) alone is sufficient.
(E) If both of them together are not sufficient.

12. P, Q, and R are positive integers. Is their product an even number?

Statement (I): P is an even number.
Statement (I): The product of P and Q is an even number and that of P and R is also an even number.

(A) If statement (I) alone is sufficient, but (II) is not sufficient.
(B) If statement (II) alone is sufficient, but (I) is not sufficient.
(C) If both statements (I) and (II) are needed.
(D) If each statement (I) or (II) alone is sufficient.
(E) If both of them together are not sufficient.

13. What is the speed of a boat in still water?

Statement (I): The boat covers 24 km in 4 hours upstream.
Statement (II): The speed of a boat in still water is 3 times that of the speed of a stream.

(A) If statement (I) alone is sufficient, but (II) alone is not sufficient.
(B) If statement (II) alone is sufficient, but (I) alone is not sufficient.
(C) If both statements (I) and (II) are needed.
(D) If each statement (I) or (II) alone is sufficient.
(E) If both of them together are not sufficient.

Directions for Questions 14 and 15: (XAT PYQ)

MBA entrance examination comprises two types of problems: formula-based problems and application-based problems. From the analysis of past data, the Interesting School of Management (ISM) observes that students good at solving application-based problems are entrepreneurial in nature. Coaching institutes for MBA entrance exams train them to spot formula-based problems and answer them correctly, so as to obtain the required overall cut-off percentile. Thus students, in general, shy away from application-based problems, and even those with entrepreneurial mindset target formula-based problems.

14. ISM wants more students with an entrepreneurial mindset in the next batch. To achieve this, ISM is considering the following proposals:

I. Preparing a question paper of two parts, Part A and Part B of the duration of one hour each. Part A and Part B would consist of formula-based problems and application-based problems, respectively. After taking away Part A, Part B would be distributed. The qualifying cut-off percentile would be calculated on the combined scores of two parts.

II. Preparing a question paper comprising Part A and Part B. While Part A would comprise formula-based problems, Part B would comprise application-based problems, each having a separate qualifying cut-off percentile.
III. Assigning one mark for formula-based problems and two marks for application-based problems as an incentive for attempting application-based problems.
IV. Allotting one mark for formula-based problems and three marks for application-based problems, without mentioning this in the question paper.

Which of the following proposal (or combination of proposals) is likely to identify students with the best entrepreneurial mindset?

(A) II
(B) I and II
(C) I and III
(D) II and III
(E) II and IV

15. ISM conducts a common entrance examination every year. This year, the question paper would comprise 60 questions with an equal mix of formula-based problems and application-based problems. All questions would carry equal marks. Balaji is appearing for the examination. Before, appearing for the examination he gets the following information from coaching institutes:

I. Application-oriented problems take more time to solve in an examination hall.
II. Chances of silly mistakes would be low in application-based problems.
III. ISM would assist the students with bank loans to start a new venture.
IV. Options are generally confusing for formula-based problems.
V. 'Practice makes a man perfect' can apply only to formula-based problems.
VI. Students get very good campus jobs.

Based on the above information, which of the following options would help him to be better prepared for the examination?

(A) I and II
(B) I, III, and V
(C) II, III, and VI
(D) IV, V, and VI
(E) I, II, IV, and V

Level of Difficulty – 3

Directions for Questions 1 to 5: Read the instructions carefully before answering the questions.

(A) The question can be answered by using statement (I) alone but not by using statement (II) alone.

(B) The question can be answered by using statement (II) alone but not by using statement (I) alone.

(C) The question can be answered by using either statements alone.

(D) The question can be answered by using both the statements together but not by using any statements alone.

(E) The Question cannot be answered by using both statements together.

1. What is the standard deviation (SD) of the four numbers a, b, c, and d?
Statement (I): The sum of a, b, c, and d is 24.
Statement (II): The sum of the squares of a, b, c, and d is 224.

2. What is the time difference between New York and London?
Statement (I): The departure time in New York is exactly 9:00 a.m. local time and the arrival time in London is 10:00 a.m. local time.
Statement (II): The flight mode is 5 hours.

3. O is the centre of two concentric circles. AE is a chord of the outer circle, and it intersects the inner circle at points B and D. C is a point on the chord in between B and D. What is the value of AC/CE.
Statement (I): BC/CD = 1
Statement (II): A third circle intersects the inner circle at B and D and the point C is on the line joining the centres of the third circle and the inner circle.

4. Chatterjee Babu has decided to take a non-stop flight from Mumbai to No man's 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 man's land when he reaches there?
Statement (I): The average speed of the plane is 700 kilometres per hour.
Statement (II): The flight distance is 10,500 km.

5. The profit obtained by selling 3 products at 10% more than the selling price is equal to the loss obtained by selling 7 products at 10 % lesser than the selling price. What is the cost price of the product?
Statement (I): The ratio of selling price to cost price is 25:24.
Statement (II): The profit percentage when the product is sold at the selling price is 4(1/6) %.

Directions for Questions 6 to 9: (XAT PYQ)

The disciplinary committee of the National Political Party (NPP) is meeting today to decide on the future of two of their party members, Mr. Loyal and his son Mr. Prodigal. Mr. Prodigal is the prime accused in the brutal murder of Mr. Victim, an opposition party leader. Mr. Prodigal is in police custody and his appeal for bail has got rejected. Mr. Loyal claims that his son is innocent, and Mr. Victim's death was the result of internal rivalry in the opposition party. Though Mr. Loyal is not accused in this case, his weakness for his son is well known. The media is blaming him for influencing key witnesses to protect his son. Severe criticism of this father-son duo, both by the media and some social activists, is damaging the image of the

party. However, Mr. Loyal has significant followers within the party and is considered an asset to the party. Any harsh decision against Mr. Loyal would adversely affect the future of NPP and could even lead to a split in the party. This would benefit the opposition.

6. Which of the following actions would adversely affect both NPP and Mr. Loyal, the most?
(A) Take no action against Mr. Loyal.
(B) Suspend Mr. Prodigal from the party with immediate effect.
(C) Expel Mr. Loyal from the party with immediate effect.
(D) Ban Mr. Loyal from entering party premises till completion of the court proceedings.
(E) Initiate an internal inquiry to find the truth.

7. At the disciplinary committee meeting, the members came up with the following suggestions. Which of the following suggestions would harm the party, the least?
(A) Maintain status quo.
(B) Expel Mr. Prodigal from the party with immediate effect to maintain the party's clean image.
(C) Initiate an internal inquiry to find the truth.
(D) Suspend Mr. Prodigal from the party with immediate effect but announce that he will be taken back if the court declares him innocent.
(E) Suspend both Mr. Loyal and Mr. Prodigal from the party with immediate effect.

8. Mr. Opportunist, a veteran member of NPP, stakes his claims to be nominated as an NPP candidate in the upcoming election. Mr. Opportunist presented the following arguments in favour of his candidature to the NPP executive committee.
I. Mr. Loyal's candidature in the upcoming election will adversely impact NPP's chances. Hence, the party should not nominate him.
II. The party should call a press conference to disown Mr. Loyal. This would enhance the party's image.
III. The party would not be able to take any strong disciplinary action against Mr. Loyal if he gets re-elected.
IV. I have a lot of goodwill and significant followers in the constituency.
V. None of my close relatives is into active politics.
Which of the following combinations would best strengthen the claim of Mr. Opportunist?
(A) I and III
(B) I and IV
(C) II and III
(D) III and V
(E) IV and V

9. The disciplinary committee has decided to suspend Mr. Loyal from the party because they felt he was influencing the judicial process. However, Mr. Loyal feels that the committee is biased and he is being framed. Now, the election has been announced. The last time, Mr. Loyal had won with a majority on account of his good work. Which of the following options is most likely to resurrect Mr. Loyal's immediate political career?
(A) The main opposition party has invited Mr. Loyal to join the party and contest the election. The chance of his winning is high.
(B) Not participating in the campaign and instructing his followers to stay away from the campaigning process.
(C) Ask his followers to support the NPP nominated candidate and display his loyalty to NPP.
(D) Mr. Loyal should contest as an independent candidate. But because of a split in votes, his chances of winning would be low.

(E) Influence the nomination process through his followers within NPP, to get one of his close associates nominated.

10. Life-Saving Pharmaceuticals (LSP) is an India-based pharmaceutical company. Its business mostly revolves around a couple of generic drugs and a few patented drugs. LSP operates in 30 odd countries and more than 50% of its sales volume is earned from outside India.

If more than 50% of their sales volume is from generic drugs, which of the following options is definitely correct? (Note: All percentages figures are with respect to total sales volume).

(A) If the sales volume of patented drugs in foreign countries is 43%, the sales volume of generic drugs in India will be less than 43%.

(B) If the sales volume of generic drugs in foreign countries is at least 24%, the sales volume of patented drugs in India will be above 24%.

(C) If the sales volume of patented drugs in India is 54%, the sales volume of generic drugs in foreign countries will be above 54%.

(D) If the sales volume of patented drugs in India is 29%, the sales volume of generic drugs in foreign countries will be above 29%.

(E) If the sales volume of generic drugs in India is at least 60%, the sales volume of patented drugs in foreign countries will be above 60%.

Directions for Questions 11 to 14: Read the caselet carefully and answer the questions below.

Munchy, a popular biscuit manufacturer in India, has a market share of 28%. Food Safety and Standards Authority of India (FSSAI) has set a permissible limit on lead in food products intended for consumption by people of all ages. Recently, a private agency for food standards, Maxi, has found out in its testing that Munchy biscuits have lead, over 20 times the permissible limit set by FSSAI. Children of age 5 to 12 years are the predominant market of Munchy biscuits, and as a result of the report by the private agency, parents are now worried about the risk that their children are facing due to the lead in those biscuits.

11. What should Shankar, the CEO of Munchy biscuits do immediately?

(A) Deny the findings of Maxi.

(B) Get Munchy biscuits certified as safe by another private agency for food Standards and publicize its report.

(C) Accuse their main competitor 'Karle' of spreading false rumours about Munchy with the help of Maxi.

(D) Write a letter of regret and inform them that the real findings will be communicated soon.

12. Rajesh is a local supermarket owner who has stocked up a lot of Munchy biscuits. What should he do now?

(A) Sell the biscuits at a discount before the news spreads.

(B) Give these biscuits free with other products.

(C) Donate the entire stock to the children of a nearby slum.

(D) Inform the customers about the findings and let them take the decision of buying the biscuits or not.

13. Shankar, the CEO of Munchy, got to know that one of their main competitors 'Karle' has manipulated the food testing agency, Maxi. Which of the following is the best thing for Munchy biscuits to do now?

(A) Market their biscuits that they are safe.

(B) File a defamation case against 'Karle'.

(C) File a defamation case against 'Maxi'.

(D) Hire another agency for food standards and communicate to the public their findings.

14. The lead content in Munchy biscuits is not above permissible limits. The above conclusion is:

(A) Definitely true
(B) Probably true
(C) Definitely false
(D) Data inadequate

Directions for Question 15: Read the caselet carefully and answer the question below.

Shan is a senior associate working for the investment bank, Golden Khaas.

Since his boss was out of the station, he was assigned the task of finalizing a 5-billion dollar asset acquisition. A few minutes before closing the deal he received some information that would sabotage the entire deal.

15. Which of the following would be the most appropriate action for Shan in response to the information he received?

I. Keep quiet about the information received and allow the deal to be finalized.
II. Pass on the information to his boss and let the boss take the final decision.
III. Tell both the clients about the deal even though the chances of the deal not pulling through is very high.
IV. Reveal the information to the clients as soon as the deal is signed.

(A) I and II
(B) III only
(C) II and IV only
(D) II only

Level of Difficulty – 1

1. (A)

Using statement (I) alone, it can be concluded that Rishabh's rank is 10. Using statement (II) alone, it cannot be determined how many students have better ranks than Rishabh.
So, (A) is the correct option.

2. (E)

Using statement (I) or statement B alone, there is no conclusive information about their income of Kelvin. Using both the statements together, one can obtain the relative incomes of Kelvin, Rylo, and Sandra but cannot determine the absolute value of Kelvin's salary. So, the question cannot be answered even by using both statements together.
Hence, option (E) is correct.

3. (D)

Using statement (I) alone, the sales revenue of the company cannot be determined. Similarly, using statement (II) alone, one cannot determine the sales revenue of the company because there is no information about the other products of the company. But using both the statements together, it can be concluded that the total sales revenue of the company is ₹2,50,000.
Hence, option (D) is correct.

4. (B)

Using statement (I) alone, one cannot determine the fifteenth day of the month because the last day might be the 28th, 30th, or 31st day of the month depending upon which month it is. Using statement (II) alone, it is known that the number of days in the month is 28 since that is the only number among 28, 30, or 31 which is divisible by 4. Also given, is the first day of the month. So, the fifteenth day can be determined using statement (II) alone.
Hence, option (B) is correct.

5. (D)

Using statement I, we cannot find the exact answer.
If $y^3 = 2$, then y is not an integer.
If $y^3 = 8$, then y is an integer.
Using statement (II),
If $3y = 3$, then y is an integer.
If $3y = 2$, then y is not an integer.
Now by combining both the statements, only for integral values for y, y^3, and 3y will be integers.

6. (D)

The best option for ICT would be to conduct a meeting of all the boards and see if a mutual agreement can be reached. If it does not happen then ICT can go ahead with what the majority takes. Hence 'D' would be the best choice for ICT.
Hence, option (D) is correct.

7. (C)

Let us try to solve the question using the Process of Elimination.
Option (A): We are not sure if all the players will play for their countries and CPL.
Option (B): This is again an assumption.
Option (D): Just because BCCT rescheduled, someone cannot expect ICT to re-schedule. So, we are left with option C.
Hence, option (C) is correct.

8. (D)

The main reason for not playing cricket is that the relations between the two countries are tense. So if ICT could convince both the boards that playing cricket would result in the betterment of the relations, then the boards might agree to play. Hence, option D is the most effective argument that ICT can use to convince both teams to play against each other.
Hence, option (D) is correct.

9. (D)

In the given options, none of these measures will prove enough to divert/avoid situations like this.

Hence, option (D) is correct.

10. (C)

It is given that in the past, complaints about Ganesh have been ignored by the class teacher. However. Amit has not experienced it personally.

Also, the class teacher is the immediate authority to take care of the administration in the class. So, the best course of action for Amit will make a formal complaint against Ganesh to the class teacher.

Even if he complained to the higher authorities or his parents, he might be asked about the response that he got from the class teacher. Therefore, he should go to his class teacher first.

Hence, option (C) is correct.

11. (D)

Considering ab is an even number.

Condition for any number to be even is:

even × even = even

odd × even = even

From statement (I) 'a' can be anything even or odd. It is given that 'a' is divisible by 3, so it can be 3, 6, or 9. So, we cannot find the exact answer.

From the statement (II) (b + 1) is divisible by 4. Therefore, 'b' can only be odd.

Now, even on combining both the statements, we cannot conclude whether 'ab' is even or odd.

Hence, option (D) is correct.

12. (C)

Given that: Average age of a, b, c, and d is 46 years.

Hence, there total age, i.e., a + b + c + d = (46 × 4) years = 184 years

From statement (I): a + b + d = 184 – 91 = 93 years

So, we cannot conclude the oldest one.

From statement (II): We cannot find the oldest person.

On combining both the statements together, we get (a + b + d) = 93.

Since they all are distinct natural numbers, then the youngest may be 1, second youngest may be 2. So, the highest age among a, b, and d can be 90 years.

So, we can definitely say that c is the oldest.

Hence, option (C) is the correct answer.

13. (B)

Using only statement I, we cannot find the answer as it only gives $m \propto V \rightarrow => m = kV = kV$ (where, m = mass, V = volume). Using only statement (II), we can find the answer by the unitary method:

$15\ cm^3 = 12\ gm$

$$1 cm^3 = \frac{12}{15}$$

$$25 cm^3 = \frac{12}{15} \times 25 = 20 gm$$

Hence, option (B) is correct.

14. (D)

Using only statement (I), we cannot find the profit as we don't know the selling price and the cost price.

Using only statement (II), we cannot find the profit as we don't know the selling price.

Now, even on combining both the statements, we don't know whether the article was marked above the cost price or the selling price.

Hence, option (D) is correct.

15. (A)

Statement (I): The difference between SP and CP = Profit = ₹900

∴ Statement I alone is sufficient to answer the question.

Statement (II): Let, CP = 100

∴ SP = 100 × 130% = 130

Profit % = 30%

Thus, statement (II) can give the value of profit %, but not the actual amount of profit.

Statement (II) is not sufficient.

Hence, statement (I) is sufficient to answer the question while the data in statement (II) is not sufficient to answer the question.

Hence, option (A) is correct.

Level of Difficulty – 2

1. (D)

Using statement (I) alone, the sets can be (1, 7, 13, 19) or (4, 8, 12, 16) or (7, 9, 11, 13). Hence, no unique answer is given.
Using statement (II) alone, there are multiple cases to consider. For example, the sets 7, 9, 11, 13, and 7, 8, 12, 13 both validate the second statement. Hence, using both the statements individually, one cannot find the answer. Using both the statements, numbers should be (7, 9, 11, 13).
Hence, option (D) is correct.

2. (E)

From statement (I), given that the sum of speeds is 12.
From statement (II), the speeds are prime numbers.
Using both the statements, it can be concluded that the speeds are 5 and 7, but one cannot find whether A is 5 and B is 7 or vice versa. Thus, multiple answers are possible, i.e., 5:7 or 7:5.
Hence, option (E) is correct.

3. (A)

When the distance for two journeys is the same, the total average speed is the harmonic mean of the average speeds of the two journeys.
Let the speed for the journey from Hyderabad to Secunderabad be A and the speed for the journey from Secunderabad to Hyderabad is B and let the total distance from Hyderabad to Secunderabad be *x*.
So, the average speed for the whole journey = 2AB/(A + B) = 60
Therefore 1/A + 1/B = 1/30
That means both A and B must be greater than 30.
Using statement (II) alone, one cannot find the exact answer as the equation will be:

$\frac{x}{A} - \frac{x}{B} = \frac{1}{2}$. This will have multiple solutions.

Hence, option (A) is correct.

4. (D)

The set has *n* integers. Find whether the median is negative or nonnegative using the conditions given in the two statements.
If the number of terms in the set is odd, then the median of the set is equal to the middle value when the numbers arranged in the set are arranged in ascending order.
If the number of terms in the set is even then the median of the set is equal to the average of the two middle values when the numbers in the set are arranged in the ascending order.
Now using statement (I), –1 is the largest negative number. But one cannot infer anything about the median of the set.
Now by using statement (II), it is known that half of the given numbers are positive. So, the remaining numbers are not positive. Thus, it can be inferred that there is an even number of integers in the set. So, the median is equal to the average of the least positive integer and the highest non-negative integer. We cannot draw any more conclusions from this statement.
Now by combining both the statements, –1 is the largest negative integer. Let's say that the least positive integer in the set is X and the value of X is at least 1. If 0 is the highest non-positive integer, then the average of 0 and X is positive. If –1 is the highest non-positive integer, then the average of –1 and X is at least 0, which is non-negative.
Hence, option (D) is correct.

5. (E)

Using statement (I), we cannot say $x = 3$. As if $x \neq 3$, still if $y = 4$, then also equations satisfy.
Using statement (II), it cannot be inferred that $x = 3$.
Now by combining both the statements,

One cannot find the exact answer because if $x = 3$ or $x \neq 3$, still both equations are satisfied.
Hence, option (E) is correct.

6. (A)
It is given that Rohit does not advertise. So, he should go with option (A).
Also, as many people do not know about his shop, advertising will definitely help.
Option (D) is not a feasible solution.
Option (C) will decrease profit further.
Option (B) will require a huge amount of investment. Also, option (A) is a better try than option (B), because there is no guarantee that even after investing a huge sum of his money, his mini supermarket will be popular.
Hence, option (A) is correct.

7. (C)
The important point is that Rohit does not want to spend much money. So, options (A) and (B) are not the solutions.
Increasing the opening hours of the shop does not guarantee that the customers will be redistributed. It might happen that most of the customers will be having a preferred time.
Option (C) is the best way to tackle the situation and it will not cost much.

8. (D)
Choose the option that does the most damage to the firm. C is not that bad as Mr. Sunil asks for a better quality product.
Among (A), (B), and (D), (D) is the most damaging option since it entails increasing the production of the product whose quality is not satisfactory according to the quality team. Thus, this might damage the reputation of the firm the most.
Hence, option (D) is correct.

9. (C)
Option (A) would do no good as awareness about the products wouldn't change customer reviews. It can only increase the number of customers buying these products.
Option (D) would be a rash decision as it is only a segment of people who are dissatisfied. Moreover, the division heads have recently decided to keep producing the three products. This wouldn't settle well with him.
Between (B) and (C), (C) is the better option as the research study will help him to improve the product.
Hence, option (C) is correct.

10. (B)
Since Mr. Pandey said that he would scrutinize Sanjay's work, he needs to perform well in the tasks assigned to him. Getting upset will not simplify things.
So, the correct option is (B).

11. (B)
Statement I is redundant as we already know that their volume is the same. We cannot find the radius and height separately.
This statement (I) alone is not sufficient.
Since, the volume of the cylinder = Volume of the spherical ball

$$\pi r^2 h = \frac{4}{3}\pi \times (7)^3$$

$$h = \frac{\frac{4}{3}\pi \times (7)^3}{\pi r^2}$$

Since we know that the value of πr^2 is given.
Then we can find the value of 'h'.
Hence statement (II) alone is sufficient to answer the question.
Hence, option (B) is correct.

12. (D)
Note:
Odd × Odd = Odd
Odd × Even = Even
Even × Even = Even

I. If one number is even. It does not matter the rest of the numbers are

even or odd. The product will always be even.

Hence, the statement (I) is alone sufficient.

II. If the product of two numbers is even, then the product of all the numbers will also be even.

Hence, statement (II) is also sufficient alone to answer the question.

Hence, option (D) is correct.

13. (C)

I. Since, upstream speed $(U) \Rightarrow u - v = \frac{24}{4}$ = 6 km/hr

$u = 6 + v$

From the statement (I) alone we could not find the speed of the boat in still water.

II. $u = 3v$ (given), Thus statement (II) alone is not sufficient.

Now, using result of statement (I).

$u = 6 + v$

Put $u = 3v$ from statement (II) is above equation.

Or, use $v = \frac{u}{3}$

$$u = 6 + \frac{u}{3}$$

$$u - \frac{u}{3} = 6$$

$$\frac{2u}{3} = 6$$

u = 9 km/hr

Hence, by using both statements (I) and (II), we can find the answer.

Hence, option (C) is the correct answer.

14. (D)

Proposal I indicates that cut-off would be based on combined score and hence students might maximise their scores by attempting 'formula-based problems'.

Proposal II indicates that both parts would have separate cut-offs and hence, most likely, students would be forced to attempt questions from both the sections. But in extreme cases, all students can choose to attempt very few (or zero) questions from 'application-based problems'.

Proposal III gives additional incentive to attempt 'application-based problems'. In a way, it might avoid the extreme outcomes of proposal II (as mentioned above).

Proposal IV is not 'fair' to the students as they have no idea about the evaluation.

So, combining proposal II and III is the best option among the four proposals mentioned above.

Hence, option (D) is correct.

15. (E)

Here, the objective is to be better prepared for the examination.

Statements III and VI are unrelated to the examination and relate to the post-examination stages of a candidate's life. Information provided on these dimensions would not be helpful 'to be better prepared for the exam'.

Whereas, all other information is relevant. So, option (E) is the correct answer as it excludes both III and VI.

Hence, option (E) is correct.

Level of Difficulty – 3

1. (D)

Using statement (I), the standard deviation cannot be obtained.

Now using statement (II), still, the standard deviation cannot be obtained.

Now by combining both the statements, It is known that

Standard deviation

$$= \sqrt{\text{mean of square of numbers} - \text{square of mean of the numbers.}}$$

We can find the standard deviation by using both statements.

Hence, option (D) is correct.

2. (D)

On considering the first and second statements alone, one can't say anything about the time difference as information will not be sufficient.

Now considering both statements together, if the journey duration is of 5 hours and the flight departure time is 9.00 a.m. arrival time according to New York will be 2.00 p.m. but it is given that in London arrival time is 10.00 a.m.. Hence the difference will be of 4 hours between New York and London.

Hence, option (D) is correct.

3. (C)

Using statement (I) we know that C is the midpoint of both BD and AE. Also using statement (II) we know that C is the midpoint of BD and AE. Hence the question can be answered by using either statement (I) alone.

Hence, option (C) is correct.

4. (E)

Mumbai and No Man's Land would be in different time zones. Using both the statements together, the time of Mumbai locals when Chatterjee babu reaches the island will be known. Hence, the question cannot be answered even by using both statements together.

Hence, option (E) is correct.

5. (E)

Let SP be x and CP be y.

From the question, $(1.1x - y) \times 3 = (y - 0.9x) \times 7$

So, $\frac{x}{y} = \frac{25}{24}$

So, we have the ratio of SP and CP, and the profit %, i.e., $\frac{1}{24} \times 100\% = 4.16\%$

However, the same information has been provided in both statements. So, both the statements are redundant.

Hence, option (E) is correct.

6. (C)

Here it is important to note: Any action against Mr. Prodigal would affect Mr. Loyal who, in turn, may affect the party. Similarly, any direct action against Mr. Loyal may again affect the party. In other words, any direct or indirect action against Mr. Loyal may affect the party.

Option (A) may affect the party negatively because the party may be perceived as inactive/unethical. However, it is good for Mr. Loyal.

Option (B) talks about suspending Mr. Prodigal. Mr. Loyal has a soft corner for his son and he may not like this option. In a way, it may be good for the party but Mr. Loyal may not like Mr. Prodigal to be suspended when charges are yet to be proved.

Expelling Mr. Loyal for something that Mr. Prodigal has done may be unfair unless charges are proved. Further, expelling Mr. Loyal from the party would alienate him. It is the worst action that can be taken against him and it might lead to

a split within the party (as mentioned in the passage). Expelling indicates that the chances of Mr. Loyal coming back to the party would be very low.
Banning Mr. Loyal from entering party premises (option D) would be similar to the previous argument but the adverse impact would be less than option (C) (both for the party and Mr. Loyal) as bans are temporary.
Initiating an internal inquiry would not impact either way (option E). Neither it would impact the party/Mr. Loyal badly nor would the party gain significantly.
Hence, option (C) is the correct answer since this is not good for both of them.
Hence, option (C) is correct.

7. (D)

Option (A): Maintaining a status quo would be perceived as inactive. Hence, it may receive adverse media reactions which would harm the party's reputation.
Option (B): Mr. Loyal may not like the option of expelling Mr. Prodigal from the party with immediate effect. This might improve the party's reputation but Mr. Loyal would get affected as a consequence party might also get affected. So this is not the correct option.
Initiating an internal inquiry would not help the party to improve its image (which is the main concern—as mentioned in the passage). This internal inquiry committee does not make sense when the matter is sub judice (assuming the judiciary is fair). Fate of Mr. Prodigal is depending on the court verdict, not on the decision of the internal inquiry committee.
Option (D) gives fair chance to Mr. Prodigal and indirectly to Mr. Loyal as well. Furthermore, this would ensure a good image among the public and media that the party adheres to the decision of the court. And at the same time, it conveys a message that the party is not unfair to the members during crisis time and would boost the morale of the party members.
Option (E) would adversely affect Mr. Loyal and hence, the party as well.
Hence, option (D) is more appropriate answer.

8. (B)

Statements I, II, and III are against Mr. Loyal, and statements IV and V are in favour of Mr. Opportunist. Statement II talks about how the party can improve its image but is not related to the candidature of the Opportunist. Similarly, Statement III talks about a post-election scenario. So, it is not pushing his candidature at this juncture. Statement V is irrelevant to Opportunist's candidature.
Statement I directly conveys that Mr. Loyal might not have a high chance of winning and statement IV says how Opportunists can be an ideal replacement of Loyal in terms of trustworthy followers.
So, the combination of statements I and IV (option B) would be the correct answer, as this option is having both anti-Loyal and pro-Opportunist arguments.
Hence, option (B) is correct.

9. (A)

Option (A) gives him chance to stay afloat. 'Chance of winning is high' (as mentioned in the option). Hence, it is better than option (D) and this is the correct option.
There are no obvious benefits from options (B), (C), and (E) for his immediate political career. These might be beneficial (except option B) in the long run but not in near future. In the case of option (E), there is no guarantee that his close associate will remain loyal to him.
Option (D) is a viable strategy but the chances of winning are low and hence this option is less likely to resurrect Mr. Loyal's immediate political career as compared to Option (A).
Hence, option (A) is correct.

10. (D)

	Patented < 50%	Generic > 50%
India < 50%	Patented India	Generic India
Foreign > 50%	Patented Foreign	Generic Foreign

Option (A): Not possible

	Patented < 50%	Generic > 50%
India < 50%	43% (given)	< 7%
Foreign > 50%	< 7%	> 43%

Option (B): Not possible

	Patented < 50%	Generic > 50%
India < 50%	< 24%	> 26%
Foreign > 50%	≥ 26%	≥ 24% (given)

Option (C): Patented drugs in India must be < 50% (as total sales in India is < 50%). So, the statement is invalid.

Option (D):

	Patented < 50%	Generic > 50%
India < 50%	29% (given)	< 21%
Foreign > 50%	< 21%	> 29%

Option (E): Generic drugs in India must be <50% (as total sales in India is <50%)

Hence, option (D) is the correct answer.

11. (B)

Option (B) is the right thing to do as it denies the allegations and also publicising the reports strengthens that Munchy is safe to consume.

Hence, option (B) is correct.

12. (D)

If the findings of Maxi are indeed true then the public who buy and consume Munchy biscuits may be affected by the lead content in those biscuits. So options (A), (B), and (C) are all ethically wrong options. Rajesh must inform his customers about the findings and let them take a call.

Hence, option (D) is correct.

13. (D)

Hiring another food testing agency would reveal the real facts about the lead content which Munchy can communicate to the public to remove any fears they have.

Hence, option (D) is correct.

14. (D)

From the information given in the passage, it is only known that Maxi, a private agency for Food Standards, has communicated its findings that Munchy biscuits have more lead than what is permissible by FSSAI. There is no information with us if these findings are indeed true or not. Thus data is inadequate.

Hence, option (D) is correct.

15. (B)

Keeping important information away from clients is not an ethical way of conducting business. Thus, statements I and IV can be eliminated.

Statement II is incorrect as transferring one's responsibility to another in a difficult situation is not very professional. Shan has the power to reveal or not reveal the information and the final decision should be taken by Shan. Statement III is the most appropriate decision even though the company may face some losses due to the action.

Hence, option (B) is correct.