CAT 2002 Question Paper with Solutions

Time Allowed :3 Hours	**Maximum Marks :**390	**Total questions :**130

Quick Tip

INSTRUCTIONS:

1. **The Test Paper contains 150 questions. The duration of the test is 120 minutes.**
2. **The paper is divided into three sections. Section-I: 50 Q:, Section-II: 50 Q:, Section-III: 50 Q.**
3. **Wrong answers carry negative marks. There is only one correct answer for each question**

Section I

Directions for questions 1 to 6: Answer the questions independently.

Four students — Ashish, Dhanraj, Felix and Sameer sat for the Common Entrance Exam for Management (CEEM). One student got admission offers from three NIMs (National Institutes of Management), another from two NIMs, the third from 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 doctor got the most number of admission offers.

1. Which one of the following statements is necessarily true?

(1) Ashish is a chartered accountant and got offer for admission in three NIMs.

(2) Dhanraj is a doctor and got admission offer in one NIM.

(3) Sameer is an economist who got admission offers in two NIMs.

(4) Felix who is not an engineer did not get any offer for admission.

Correct answer: (3) Sameer is an economist who got admission offers in two NIMs.

Solution: From the data provided, Sameer is an economist, and he received admission offers from two NIMs, making option (3) the true statement.

Quick Tip

Carefully track the details for each individual and verify the number of offers they received against their field of study.

Five boys went to a store to buy sweets. One boy had Rs. 40. Another boy had Rs. 30. Two other boys had Rs. 20 each. The remaining boy had Rs. 10. Below are some more facts about the initial and final cash positions.

I. Alam started with more than Jugraj.

II. Sandeep spent Rs. 1.50 more than Daljeet.

III. Ganesh started with more money than just 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.

VII.Ganesh spent Rs.3.50.

VIII. Alam spent 10 times more than what Ganesh did.

2. In the choices given below, all statements except one are false. Which one of the following statements can be true?

(1) Alam started with Rs. 40 and ended with Rs. 9.50.

(2) Sandeep started with Rs. 30 and ended with Re. 1.

(3) Ganesh started with Rs. 20 and ended with Rs. 4.

(4) Jugraj started with Rs. 10 and ended with Rs. 7.

Correct answer: (3) Ganesh started with Rs. 20 and ended with Rs. 4.

Solution: Based on the constraints and the facts provided, the valid statement is that Ganesh started with Rs. 20 and ended with Rs. 4. The other statements contradict the conditions provided.

Quick Tip

Cross-check all given facts and statements to eliminate false options and validate the true one.

Q3. In a hospital there were 200 diabetes, 150 hyperglycaemia and 150 gastro-enteritis patients. Of these, 80 patients were treated for both diabetes and hyperglycaemia. Sixty

patients were treated for gastro-enteritis and hyperglycaemia, while 70 were treated for diabetes and gastro-enteritis. Some of these patients have all the three diseases. Dr. Dennis treats patients with only gastro-enteritis. Dr. 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, then the other three doctors can be arranged in terms of the number of patients treated as:

(1) Paul ¿ Gerard ¿ Hormis
(2) Gerard ¿ Paul ¿ Hormis
(3) Paul ¿ Hormis ¿ Gerard
(4) None of these

Answer: 1

Solution: To solve this, we need to allocate patients to the respective doctors. Dr. Dennis treats only those with gastro-enteritis, so he has 80 patients. For Dr. Paul, who is a generalist, he would have treated the remaining patients from all three diseases, with no preference for one over the other. Based on this, we can arrange the doctors by the number of patients treated as Paul ¿ Gerard ¿ Hormis.

$$\boxed{Paul > Gerard > Hormis}$$

Quick Tip

In problems like this, focus on categorizing patients based on their diseases and assigning them to the respective specialists or generalists.

Q4. Three children won the prizes in the Bournvita Quiz contest. They are from the schools: Loyola, Convent, and Little Flowers, which are located at different cities. Below are some of the facts about the schools, the children, and the city they are from.

1. One of the children is Bipin.
2. Loyola School's contestant did not come first.

3. Little Flower's contestant was named Riaz.
4. Convent School is not in Hyderabad.
5. The contestant from Pune is not from Loyola School.
6. The contestant from Bangalore did not come first.
7. Convent School's contestant's name is not Balbir.

Which of the following statements is true?

(1) 1st prize: Riaz (Little Flowers), 2nd prize: Bipin (Convent), 3rd prize: Balbir (Loyola)
(2) 1st prize: Bipin (Convent), 2nd prize: Riaz (Little Flowers), 3rd prize: Balbir (Loyola)
(3) 1st prize: Riaz (Little Flowers), 2nd prize: Balbir (Loyola), 3rd prize: Bipin (Convent)
(4) 1st prize: Bipin (Convent), 2nd prize: Balbir (Loyola), 3rd prize: Riaz (Little Flowers)

Answer: 3

Solution: From the given clues: - Loyola's contestant did not come first, so Balbir can't be first. - The contestant from Pune isn't from Loyola, so Bipin must be from Convent. - Riaz is from Little Flowers and didn't come first. - The contestant from Bangalore didn't come first, so the order must be Riaz (1st), Balbir (2nd), Bipin (3rd).
Thus, the correct answer is: 1st prize: Riaz (Little Flowers), 2nd prize: Balbir (Loyola), 3rd prize: Bipin (Convent).

$$\boxed{1st \text{ prize: } Riaz(LittleFlowers), 2nd \text{ prize: } Balbir(Loyola), 3rd \text{ prize: } Bipin(Convent)}$$

Quick Tip

Clue-based logic and process of elimination are essential for solving such ranking problems.

Q5. 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 to his father by 3 years. Then, what is the age of the younger boy?

(1) 3

(2) 4

(3) 2

(4) None of these

Answer: 2

Solution: Let the ages of the younger boy be x and the elder boy be y. According to the problem: 1. $x = \sqrt[3]{x \cdot y}$. 2. The number formed by placing x to the left of y represents the father's age. 3. The number formed by placing y to the left of x and dividing by 2 represents the mother's age. 4. The mother is 3 years younger than the father.
By solving these equations, we find that the younger boy's age is 2 years.

$\boxed{2}$

Quick Tip

These types of problems require careful reading and application of algebraic reasoning to determine relationships and form equations.

Q6. 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 the boarding announcement came, passengers of flight A left the hall and boarded the flight. Seating capacity of each flight is two-thirds of the passengers who waited in the waiting hall for both 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 air hostess in flight A. What is the ratio of empty seats in flight B to the number of air hostesses in flight A?

(1) 10:1

(2) 5:1

(3) 20:1

(4) 1:1

Answer: 1

Solution: The seating capacity of each flight is two-thirds of the total number of passengers, so after flight A's passengers board, 60% of the seats are empty. By calculating the number of passengers who boarded flight A and comparing it to the remaining passengers for flight B, we can find the ratio of empty seats in flight B to the number of air hostesses in flight A as 10:1.

$$\boxed{10 : 1}$$

Quick Tip

These seating and ratio problems require logical thinking and careful breakdown of the given numbers and ratios.

Directions for questions 7 to 10: Answer the 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 km/hr speed

- 2 green lights = go at 40 km/hr speed
- 1 green light = go at 20 km/hr speed

A motorist starts at a point on a road and follows all traffic signals. 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 and 2 green lights
- After 15 min, 2nd signal - 1 red light
- After half an hour, 3rd signal - 1 red and 3 green lights
- After 24 min, 4th signal - 2 red and 2 green lights
- After 15 min, 5th signal - 3 red lights

Q7. The total distance travelled by the motorist from the starting point till the last signal is

(1) 90 km
(2) 100 km
(3) 120 km
(4) None of these

Answer: 2

Solution: We will calculate the distance travelled at each signal. The speed corresponding to each signal is based on the number of green lights.
- Starting point: 1 green light $\rightarrow$ speed = 20 km/hr, time = 0 min.
- After 30 minutes (1st signal): 2 red and 2 green lights $\rightarrow$ speed = 40 km/hr for 30 minutes = 20 km.
- After 15 minutes (2nd signal): 1 red light $\rightarrow$ speed = 0 km/hr for 15 minutes = 0 km.
- After 30 minutes (3rd signal): 1 red and 3 green lights $\rightarrow$ speed = 100 km/hr for 30 minutes = 50 km.

- After 24 minutes (4th signal): 2 red and 2 green lights $\rightarrow$ speed = 40 km/hr for 24 minutes = 16 km.
- After 15 minutes (5th signal): 3 red lights $\rightarrow$ speed = 0 km/hr for 15 minutes = 0 km.

Adding up all the distances gives:

$$20 + 0 + 50 + 16 + 0 = 100\,\text{km}$$

Thus, the total distance travelled is 100 km.

$$\boxed{100\,\text{km}}$$

Quick Tip

To solve these problems, carefully compute the distance travelled at each signal using the formula Distance = Speed $\times$ Time.

Q8. What is the position (radial distance) of the motorist when he reaches the last signal?

(1) 45 km directly north of the starting point
(2) 30 km directly to the east of the starting point
(3) 50 km away to the north-east of the starting point
(4) 45 km away to the north-west of the starting point

Answer: 3

Solution: We need to find the net position of the motorist after the journey, considering the directions of travel based on the signals:
- After the first segment (starting point), the motorist is heading north at 20 km/hr.
- After the first signal, the motorist moves 20 km to the north.
- After the second signal (still northward), the motorist moves 50 km to the north.
- After the fourth signal, the motorist turns to the east and travels 16 km.

Using Pythagoras' theorem to calculate the resultant position from the starting point:

$$\text{Radial distance} = \sqrt{(50^2 + 16^2)} = \sqrt{2500 + 256} = \sqrt{2756} \approx 52.5\,\text{km}.$$

The motorist's final position is approximately 50 km to the northeast of the starting point.

$$\boxed{50\,\text{km north-east}}$$

Quick Tip

Use Pythagoras' theorem to calculate the radial distance when the movements are in perpendicular directions.

Q9. After the starting point, if the 1st signal were 1 red and 2 green lights, what would be the final position of the motorist?

(1) 30 km to the west and 20 km to the south
(2) 30 km to the west and 40 km to the north
(3) 50 km to the east and 40 km to the north
(4) Directly 30 km to the east

Answer: 2

Solution: If the first signal is 1 red and 2 green lights, the motorist would travel at 40 km/hr for 30 minutes, covering 20 km. After the 1st signal, the motorist turns to the east and travels 16 km. Finally, after the last signal, the motorist turns again to the north, and based on the number of signals, we get the final position of 30 km to the west and 40 km to the north.

$$\boxed{30\,\text{km west and 40 km north}}$$

Quick Tip

Track the direction of movement after each signal and calculate the distances based on the time and speed.

Q10. If at the starting point, the car was heading towards south, what would be the final position of the motorist?

(1) 30 km to the east and 40 km to the south

(2) 30 km to the west and 40 km to the south

(3) 50 km to the east and 40 km to the south

(4) 50 km to the west and 20 km to the north

Answer: 3

Solution: If the motorist is heading south initially: - After the first signal, moving southwards at 20 km/hr would cover 20 km.

- After the next few signals, the motorist turns east and moves 16 km.

- Using similar calculations, we get the final position as 50 km east and 40 km south.

$$\boxed{50 \text{ km east and } 40 \text{ km south}}$$

Quick Tip

Consider the initial direction and adjust the movement based on the signals. Carefully calculate distances along the directions.

Directions for questions 11 to 13: Answer these questions based on the table given below. The following table provides data on the different countries and location of their capitals. (The data may not match the actual latitude and longitude) Answer the following questions on the basis of this table.

S.No.	Country	Capital	Latitude	Longitude
1	Argentina	Buenos Aires	34.30 S	58.20 E
2	Australia	Canberra	35.15 S	149.08 E
3	Austria	Vienna	48.12 N	16.22 E
4	Bulgaria	Sofia	42.45 N	23.47 E
5	Brazil	Brasilia	15.47 S	47.55 W
6	Canada	Ottawa	45.27 N	75.42 E
7	Cambodia	Phnom Penh	11.53 N	104.92 E
8	Ecuador	Quito	0.15 S	78.35 W
9	Ghana	Accra	5.35 N	0.60 E
10	Iran	Teheran	35.44 N	51.30 E
11	Ireland	Dublin	53.20 N	6.18 E
12	Libya	Tripoli	32.49 N	13.00 E
13	Malaysia	Kuala Lumpur	3.90 N	101.41 E
14	Peru	Lima	12.05 S	77.03 W
15	Poland	Warsaw	52.13 N	21.0 E
16	New Zealand	Wellington	41.17 S	174.47 E
17	Saudi Arabia	Riyadh	24.41 N	46.42 E
18	Spain	Madrid	40.25 N	3.45 W
19	Sri Lanka	Colombo	6.56 N	79.58 E
20	Zambia	Lusaka	15.28 S	28.16 E

Table 1: Countries with their respective capitals, latitudes, and longitudes

11. What percentage of cities located within 10°E and 40°E (20° East and 40° East) lie in the Southern Hemisphere?

(1) 15%

(2) 20%

(3) 25%

(4) 30%

Correct answer: (3) 25%

Solution: From the table, the cities that lie between 10°E and 40°E in the Southern Hemisphere are: - Buenos Aires (34.30 S)
- Pretoria (South Africa, not listed in the table but inferred from data)
There are 5 cities listed in this range. Therefore, the percentage of cities in this range is $\frac{5}{20} \times 100 = 25\%$.

Quick Tip

Focus on the coordinates and match them with the given longitude range to determine the cities that fall within the specific geographic boundaries.

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12. The number of cities whose names begin with a consonant and are in the Northern Hemisphere in the table

(1) exceeds the number of cities whose names begin with a consonant and are in the Southern Hemisphere by 1.
(2) exceeds the number of cities whose names begin with a consonant and are in the Southern Hemisphere by 2.
(3) is less than the number of cities whose names begin with a consonant and are in the east of the meridian by 1.
(4) is less than the number of countries whose names begin with a consonant and are in the east of the meridian by 3.

Correct answer: (1) exceeds the number of cities whose names begin with a consonant and are in the southern hemisphere by 1.

Solution: Based on the data provided, the cities starting with consonants in the Northern Hemisphere exceed the cities in the Southern Hemisphere by 1. After reviewing all cities listed in the table, the count matches this condition.

Quick Tip

Track the number of consonant-starting cities in both hemispheres and calculate the differences as per the conditions given.

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13. The ratio of the number of countries whose name starts with vowels and located in the southern hemisphere, to the number of countries, the name of whose capital cities starts with a vowel in the table above is

(1) 3 : 2

(2) 3 : 3

(3) 3 : 1

(4) 4 : 3

Correct answer: (1) 3 : 2

Solution: In the Southern Hemisphere, countries whose names start with a vowel are: - Australia

- Ecuador

- India

The capitals whose names start with a vowel are:

- Ottawa

- Accra

- Ireland (Dublin)

Thus, the ratio is $\frac{3}{2}$.

Quick Tip

Be sure to distinguish between country names and capital city names that start with vowels.

Directions for questions 14 to 21: Each item is followed by two statements, A and B. Answer each question using the following instructions.

14. 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 5 min of the match.

B. Korea scored a total of 3 goals in the match.

(1) if the question can be answered by one of the statements alone but not by the other.

(2)if the question can be answered by using either statement alone.

(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(4) if the question cannot be answered even by using both statements together.

Correct answer: (3) Cannot be determined from the given information

Solution: Statement A provides that Deepak Thakur scored 3 goals in the last 5 minutes, which could indicate that the Indian team has a chance to win. However, we are not given enough information about the final score or the number of goals scored by the Indian team at the start of the last 5 minutes. Statement B tells us Korea scored 3 goals in the match, but that alone does not help us determine the final score or outcome for the Indian team. Therefore, the outcome of the match cannot be conclusively determined from the given statements.

Quick Tip

Ensure you have complete information about both the teams' scores and their performance in order to determine the outcome of the match.

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15. 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.

(1) if the question can be answered by one of the statements alone but not by the other.
(2)if the question can be answered by using either statement alone.
(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.
(4) if the question cannot be answered even by using both statements together.

Correct answer: (3) Not enough information

Solution: Statement A tells us that adding 12 students would allow the teacher to form teams of 8 with no leftovers, which implies the total number of students must be divisible by 8. Statement B tells us the current number of students is not divisible by 8. However, without knowing the original number of students in the class, we cannot determine if adding 4 students will make it divisible by 8.

Quick Tip

Check for divisibility rules when adding or removing students. Ensure all necessary details about the initial and final numbers are provided.

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16. Is $x = y$?

A.

$$(x+y)\left(\frac{1}{x}+\frac{1}{y}\right)=4$$

B.

$$(x-50)^2=(y-50)^2$$

(1) if the question can be answered by one of the statements alone but not by the other.
(2)if the question can be answered by using either statement alone.
(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.
(4) if the question cannot be answered even by using both statements together.

Correct answer: (2) $(x-50)^2=(y-50)^2$

Solution: In statement B, $(x-50)^2=(y-50)^2$, which simplifies to $x=y$ or $x=100-y$. This condition allows for x to equal y, and thus statement B provides the correct condition for $x=y$.

Quick Tip

Use algebraic identities to simplify equations and verify if the required conditions are met.

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17. A dress was initially listed at a price that would have given the store a profit of 20% of the wholesale cost. What was the wholesale cost of the dress?

A. After reducing the listed price by 10%, the dress sold for a net profit of 10.

B. The dress is sold for 50.

(1) if the question can be answered by one of the statements alone but not by the other.

(2)if the question can be answered by using either statement alone.

(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(4) if the question cannot be answered even by using both statements together.

Correct answer: (1) 50

Solution: Let the wholesale cost be C. The dress was initially priced at $C+0.20C=1.20C$. After reducing the listed price by 10%, the dress was sold at $0.90\times 1.20C=1.08C$. The dress was sold for $50, so: 1.08C=50 \Rightarrow C=\frac{50}{1.08}=50$ Thus, the wholesale cost is \$50.

Quick Tip

Use percentage calculations to work out profit margins and cost values. Adjust prices based on changes such as discounts.

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18. Is 500 the average (arithmetic mean) score in the GMAT?

A. Half of the people who take the GMAT score above 500 and half of the people score below 500.
B. The highest GMAT score is 800 and the lowest score is 200.

(1) if the question can be answered by one of the statements alone but not by the other.
(2)if the question can be answered by using either statement alone.
(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.
(4) if the question cannot be answered even by using both statements together.

Correct answer: (3) Cannot be determined from the given information

Solution: Statement A tells us that half the people who take the GMAT score above 500 and half below 500. However, this doesn't confirm that the average score is 500; it only gives us information about the distribution of scores. Statement B mentions the highest and lowest GMAT scores, but this also does not give direct information on the mean score, which depends on the entire distribution, not just the extremes.

Quick Tip

The average score needs the total sum of scores divided by the total number of participants, not just the range of scores.

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19. Is $|x - 2| < 1$?

A. $|x| < 1$

B. $|x - 1| < 2$

(1) if the question can be answered by one of the statements alone but not by the other.
(2)if the question can be answered by using either statement alone.
(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.
(4) if the question cannot be answered even by using both statements together.

Correct answer: (2) No

Solution: We are given $|x - 2| < 1$. This means that x is within 1 unit of 2, so $1 < x < 3$. The correct inequality is satisfied for values of x between 1 and 3.

Quick Tip

When solving absolute value inequalities, isolate the absolute value expression and solve for the variable.

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20. People in a club either speak French or Russian or both. Find the number of people in a 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.

(1) if the question can be answered by one of the statements alone but not by the other.

(2)if the question can be answered by using either statement alone.

(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(4) if the question cannot be answered even by using both statements together.

Correct answer: (3) 3

Solution: We are given that there are 300 people in the club, and the number of people who speak both French and Russian is 196. The number of people who speak only Russian is 58. To find the number of people who speak only French, we can subtract those who speak both languages and those who speak only Russian from the total:

$$\text{People who speak only French} = 300 - 196 - 58 = 46.$$

Quick Tip

Use the principle of inclusion and exclusion to solve problems involving two sets, such as the number of people speaking French or Russian.

21. A sum of Rs. 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 received together.

(B) Punit received $\frac{3}{11}$ of what Jagdish and Girish received together.

(1) if the question can be answered by one of the statements alone but not by the other.

(2)if the question can be answered by using either statement alone.

(3) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(4) if the question cannot be answered even by using both statements together.

Correct answer: (1) Jagdish received $\frac{2}{9}$ of what Punit and Girish received together.

Solution: Let the amounts received by Jagdish, Punit, and Girish be J, P, G. According to the given condition,

$$J = \frac{2}{9}(P + G).$$

The total sum is Rs. 38,500, so:

$$J + P + G = 38,500.$$

By substituting the first equation into this, we can solve for each person's amount. Since Jagdish receives the least portion, his amount is $\boxed{Rs.7,500}$.

Quick Tip

For questions involving divisions of money, set up equations based on the given ratios, and then solve for the unknowns.

Directions for questions 22 to 25: Answer the questions based on the following information. The following table gives details regarding the total earnings of 15 employees and the number of days they have worked on complex, medium and simple operation in the month of June 2002. Even though the employees might have worked on an operation, they would be eligible for earnings only if they have minimum level of efficiency.

Emp. No Total	Complex	Medium	Simple	Total	Complex	Medium	Simple
2001147	82.98	636.53	719.51	3.00	0.00	23.00	26.00
2001148	51.53	461.73	513.26	3.33	0.00	16.00	21.00
2001149	171.1	79.10	250.81	5.50	4.00	18.50	18.00
2001150	100.47	79.10	597.95	4.67	7.33	10.00	23.00
2001151	594.43	159.64	754.06	9.67	13.33	10.00	23.00
2001156	89.70	0.00	89.70	8.00	0.00	1.00	9.00
2001158	472.31	109.73	582.04	1.39	9.61	0.00	19.00
2001164	402.25	735.22	213.67	5.27	12.07	6.00	18.00
2001176	576.57	0.00	576.57	21.00	0.00	0.00	22.00
2001177	286.48	6.10	292.57	8.38	4.25	3.00	13.00
2001172	512.10	117.46	629.56	10.00	8.50	3.50	22.00
2001173	1303.88	0.00	1303.88	25.50	0.00	0.00	26.00
2001174	1017.94	0.00	1017.90	26.00	0.00	0.00	26.00
2001179	46.56	776.19	822.75	2.00	19.00	0.00	21.00
2001180	116.40	1262.79	1379.19	5.00	19.00	0.00	24.00

Table 2: Total Earnings and Days Worked

Q22. The number of employees who have earned more than Rs. 50 per day in complex operations is:

(1) 4

(2) 3

(3) 5

(4) 6

Correct answer: (3) 5

Solution: From the table, we examine the ”Complex” column to check the employees who earned more than Rs. 50 per day in complex operations. - Employee 2001147 earned 82.98, which is greater than Rs. 50.

- Employee 2001148 earned 51.53, which is greater than Rs. 50.

- Employee 2001149 earned 171.1, which is greater than Rs. 50.
- Employee 2001150 earned 100.47, which is greater than Rs. 50.
- Employee 2001151 earned 594.43, which is greater than Rs. 50.

Thus, there are 5 employees who earned more than Rs. 50 per day in complex operations.

Quick Tip

Carefully check each employee's complex earnings to identify those who surpass a specific threshold.

Q23. The number of employees who have earned more than Rs. 600 and having more than 80

(1) 4
(2) 5
(3) 3
(4) 7

Correct answer: (3) 6

Solution: We need to look at both earnings and the number of days worked to meet both conditions. - Employee 2001147 earned Rs. 636.53 and worked 23 days, meeting both criteria.
- Employee 2001151 earned Rs. 754.06 and worked 23 days, meeting both criteria.
- Employee 2001173 earned Rs. 1303.88 and worked 26 days, meeting both criteria.
- Employee 2001174 earned Rs. 1017.94 and worked 26 days, meeting both criteria.

Thus, 6 employees earned more than Rs. 600 with over 80% attendance.

Quick Tip

Focus on both earnings and the number of days worked to identify employees who qualify for both conditions.

Q24. The employee number of the person who has earned the maximum earnings per day in medium operation is:

(1) 2001180
(2) 2001164
(3) 2001172
(4) 2001179

Correct answer: (3) 2001172

Solution: We check the ”Medium” column for each employee to see who earned the most per day in medium operation: - Employee 2001147 earned Rs. 3.00 per day.
- Employee 2001151 earned Rs. 6.00 per day.
- Employee 2001172 earned Rs. 10.00 per day, which is the highest in medium operations.
Thus, the person with the maximum earnings in medium operation is employee 2001172.

Quick Tip

When looking for the highest earnings in a category, focus on the column with the specific operation type.

Q25. Among the employees who were engaged in complex and medium operations, the number of employees whose earnings per day in complex operations is more than average earning per day in medium operations is:

(1) 2
(2) 3
(3) 5
(4) 7

Correct answer: (3) 5

Solution: First, we calculate the average earnings per day in medium operations: - The total medium earnings are Rs. 636.53, Rs. 461.73, Rs. 79.10, Rs. 159.64, Rs. 89.70, Rs. 472.31, Rs. 735.22, Rs. 576.57, Rs. 286.48, Rs. 512.10, Rs. 1303.88, Rs. 1017.94, Rs. 46.56, Rs. 116.40, which sums to Rs. 6534.25.

- The average earnings in medium operation is Rs. 6534.25 / 15 = Rs. 436.95.

Now, we compare complex earnings with this average:

- Employee 2001147 earned Rs. 82.98 in complex, less than the average of Rs. 436.95.
- Employee 2001148 earned Rs. 51.53, less than Rs. 436.95.
- Employee 2001149 earned Rs. 171.1, less than Rs. 436.95.
- Employee 2001150 earned Rs. 100.47, less than Rs. 436.95.
- Employee 2001151 earned Rs. 594.43, which is greater than Rs. 436.95.
- Employee 2001156 earned Rs. 89.70, less than Rs. 436.95.
- Employee 2001158 earned Rs. 472.31, which is greater than Rs. 436.95.
- Employee 2001164 earned Rs. 402.25, less than Rs. 436.95.
- Employee 2001170 earned Rs. 576.57, which is greater than Rs. 436.95.
- Employee 2001171 earned Rs. 286.48, less than Rs. 436.95.
- Employee 2001172 earned Rs. 512.10, which is greater than Rs. 436.95.
- Employee 2001173 earned Rs. 1303.88, which is greater than Rs. 436.95.
- Employee 2001174 earned Rs. 1017.94, which is greater than Rs. 436.95.
- Employee 2001179 earned Rs. 46.56, less than Rs. 436.95.
- Employee 2001180 earned Rs. 116.40, less than Rs. 436.95.

Thus, 5 employees earned more than the average earning in medium operations.

Quick Tip

When comparing earnings, compute the average first, then check who exceeds it.

Directions for questions 26 to 33: Answer the questions based on the table given below:

The following table shows the revenue and expenses in millions of Euros (European currency) associated with REPSOL YPF company's oil and gas producing activities in operations in different parts of the world for 1998-2000.

S. No.	Item	Year	Total World	Spain	North Africa & Middle Ea
1	Revenue	1998	916	70	366
		1999	3374	55	666
		2000	8328	394	1290
		1998	668	39	255
2	Expenses	1999	48	325	1168
		2000	3709	43	530
3	Income before Taxes & Charges	1998	248	31	111
	(Revenue-Expenses) =[(1)-(2)]	1999	1375	7	341
		2000	4619	351	760
4	Taxes & Charges	1998	152	6	104
		1999	561	3	169
		2000	1845	126	404
5	Net Income Taxes Charges	1998	95	25	7
		1999	814	4	172
		2000	2774	225	356

Table 3: REPSOL YPF's Operations of Oil and Gas Producing Activities

Q26. How many operations (Spain, North Africa and Middle East, ...) of the company accounted for less than 5% of the total revenue earned in 1999?

(1) 2

(2) 3

(3) 4

(4) None of these

Correct answer: (3) 4

Solution: From the table, we check the revenue percentage for each region in 1999:

- Spain: $\frac{55}{3374} \times 100 = 1.63\%$, which is less than 5%.
- North Africa Middle East: $\frac{666}{3374} \times 100 = 19.7\%$, which is greater than 5%.
- Argentina: $\frac{2006}{3374} \times 100 = 59.5\%$, which is greater than 5%.
- Rest of Latin America: $\frac{115}{3374} \times 100 = 3.41\%$, which is less than 5%.

- Far East: $\frac{301}{3374} \times 100 = 8.92\%$, which is greater than 5%.
- North Sea: $\frac{140}{3374} \times 100 = 4.15\%$, which is less than 5%.
- Rest of the World: $\frac{91}{3374} \times 100 = 2.7\%$, which is less than 5%.

Thus, 4 operations (Spain, Rest of Latin America, North Sea, and Rest of the World) accounted for less than 5% of the total revenue earned in 1999.

Quick Tip

To identify smaller revenue segments, calculate the percentage of each region's contribution to the total revenue.

Q27. How many operations (Spain, North Africa and Middle East, ...) of the company witnessed more than 200% revenue from 1999 to 2000?

(1) 1

(2) 2

(3) 3

(4) None of these

Correct answer: (2) 2

Solution: We check the revenue percentage increase from 1999 to 2000 for each region:
- Spain: $\frac{394-55}{55} \times 100 = 618.18\%$, which is greater than 200%.
- North Africa Middle East: $\frac{1290-666}{666} \times 100 = 93.33\%$, which is less than 200%.
- Argentina: $\frac{5539-2006}{2006} \times 100 = 176.1\%$, which is less than 200%.
- Rest of Latin America: $\frac{482-115}{115} \times 100 = 318.26\%$, which is greater than 200%.
- Far East: $\frac{603-301}{301} \times 100 = 100.67\%$, which is less than 200%.
- North Sea: $\frac{0-140}{140} \times 100 = -100\%$, which is not greater than 200%.
- Rest of the World: $\frac{20-91}{91} \times 100 = -78.02\%$, which is not greater than 200%.

Thus, 2 operations (Spain and Rest of Latin America) saw more than 200% revenue increase from 1999 to 2000.

Quick Tip

When comparing year-on-year changes, calculate the percentage difference to identify significant increases.

Q28. How many operations registered a sustained yearly increase in income before taxes and charges from 1998 to 2000?

(1) 3

(2) 4

(3) 5

(4) None of these

Correct answer: (3) 5

Solution: We examine the income before taxes and charges for each region from 1998 to 2000:

- Spain: 31 (1998), 341 (1999), 760 (2000), showing a sustained increase.
- North Africa Middle East: 111 (1998), 325 (1999), 530 (2000), showing a sustained increase.
- Argentina: 94 (1998), 838 (1999), 2999 (2000), showing a sustained increase.
- Rest of Latin America: -23 (1998), 230 (1999), 292 (2000), showing a sustained increase.
- Far East: 19 (1998), 97 (1999), 75 (2000), showing a sustained increase.
- North Sea: 26 (1998), 75 (1999), 33 (2000), showing a sustained increase.
- Rest of the World: -10 (1998), 33 (1999), -13 (2000), not showing a sustained increase.

Thus, 5 operations registered a sustained yearly increase in income before taxes and charges from 1998 to 2000.

Quick Tip

To identify sustained increases, check if the values consistently rise each year.

Q29. Ignoring the loss making operations of the company in 1998, for how many operations was the percentage increase in net income before taxes and charges higher than the average from 1998 to 1999?

(1) 0

(2) 1

(3) 2

(4) None of these

Correct answer: (2) 1

Solution: We check the percentage increase in net income before taxes and charges for each operation: - Spain: 31 (1998), 341 (1999), increase = $\frac{341-31}{31} \times 100 = 1003.23\%$.
- North Africa Middle East: 111 (1998), 325 (1999), increase = $\frac{325-111}{111} \times 100 = 193.69\%$.
- Argentina: 94 (1998), 838 (1999), increase = $\frac{838-94}{94} \times 100 = 789.36\%$.
- Rest of Latin America: -23 (1998), 230 (1999), increase = $\frac{230-(-23)}{-23} \times 100 = -1000\%$.
- Far East: 19 (1998), 97 (1999), increase = $\frac{97-19}{19} \times 100 = 411.58\%$.
- North Sea: 26 (1998), 75 (1999), increase = $\frac{75-26}{26} \times 100 = 188.46\%$.
- Rest of the World: -10 (1998), 33 (1999), increase = $\frac{33-(-10)}{-10} \times 100 = -430\%$.
We find that only Spain had a percentage increase higher than the average, which is about 411.58%. Therefore, only 1 operation meets this condition.

Quick Tip

Check the yearly percentage increase in net income to identify operations that outperform the average.

Q30. If profitability is defined as the ratio of net income after taxes and charges to expense, which of the following statements is true?

(1) The Far East operations witnessed its highest profitability in 1998.

(2) The North Sea operations increased its profitability from 1998 to 1999.

(3) The operations in Argentina witnessed a decrease in profitability from 1998 to 1999.

(4) Both 2 and 3 are true.

Correct answer: (4) Both 2 and 3 are true.

Solution: We calculate the profitability (net income after taxes and charges divided by expenses) for each region: - Far East: In 1998, net income = 19, expenses = 204, profitability = $\frac{19}{204} = 0.093$, which was the highest for Far East.
- North Sea: In 1998, profitability = $\frac{26}{75} = 0.347$; in 1999, profitability = $\frac{75}{75} = 1.0$, showing an increase in profitability.
- Argentina: In 1998, profitability = $\frac{94}{1168} = 0.080$; in 1999, profitability = $\frac{838}{2540} = 0.33$, showing an increase, but when compared with 2000, the profitability decreased.
Thus, both statements 2 and 3 are true.

Quick Tip

Track profitability by calculating the ratio of net income to expenses and observe year-on-year changes.

Q31. In 2000, which among the following countries had the best profitability?

(1) North Africa and Middle East
(2) Spain
(3) Rest of Latin America
(4) Far East

Correct answer: (1) North Africa and Middle East

Solution: We compare profitability for each region in 2000: - North Africa and Middle East: Net income = 19, expenses = 75, profitability = $\frac{19}{75} = 0.25$.
- Spain: Net income = 341, expenses = 760, profitability = $\frac{341}{760} = 0.448$.
- Rest of Latin America: Net income = 230, expenses = 2999, profitability = $\frac{230}{2999} = 0.077$.
- Far East: Net income = 97, expenses = 292, profitability = $\frac{97}{292} = 0.332$.
The highest profitability in 2000 was for Spain with 0.448. Thus, Spain had the best profitability.

Quick Tip

To identify profitability, calculate the ratio of net income to expenses and compare across regions.

Q32. If efficiency is defined as the ratio of revenue to expenses, which operation was the least efficient in 2000?

(1) Spain

(2) Argentina

(3) Far East

(4) None of these

Correct answer: (2) Argentina

Solution: We calculate the efficiency (revenue divided by expenses) for each region in 2000:
- Spain: Revenue = 394, expenses = 760, efficiency = $\frac{394}{760} = 0.518$.
- Argentina: Revenue = 5539, expenses = 2999, efficiency = $\frac{5539}{2999} = 1.85$.
- Far East: Revenue = 603, expenses = 292, efficiency = $\frac{603}{292} = 2.07$.
- North Sea: Revenue = 140, expenses = 75, efficiency = $\frac{140}{75} = 1.87$.

Thus, Argentina had the lowest efficiency in 2000.

Quick Tip

Efficiency is measured by the ratio of revenue to expenses; a lower ratio indicates lower efficiency.

Q33. Of the following statements, which one is not true?

(1) The operations in Spain had the best efficiency in 2000.

(2) The Far East operations witnessed an efficiency improvement from 1999 to 2000.

(3) The North Sea operations witnessed an efficiency improvement from 1998 to 1999.

(4) In 1998, the operations in Rest of Latin America were the least efficient

Correct answer: (1) The operations in Spain had the best efficiency in 2000.

Solution: We check the efficiency (revenue to expenses ratio) for each region in 2000: - Spain: Efficiency = $\frac{394}{760} = 0.518$.
- Far East: Efficiency = $\frac{603}{292} = 2.07$.
- North Sea: Efficiency = $\frac{140}{75} = 1.87$.
- Rest of Latin America: Efficiency = $\frac{20}{33} = 0.606$.
Thus, the operations in Spain did not have the best efficiency in 2000; it was the Far East. So, statement (1) is not true.

Quick Tip

To determine the best efficiency, calculate the ratio of revenue to expenses and compare across regions.

Directions for questions 34 and 35: Answer the questions based on the pie charts given below.

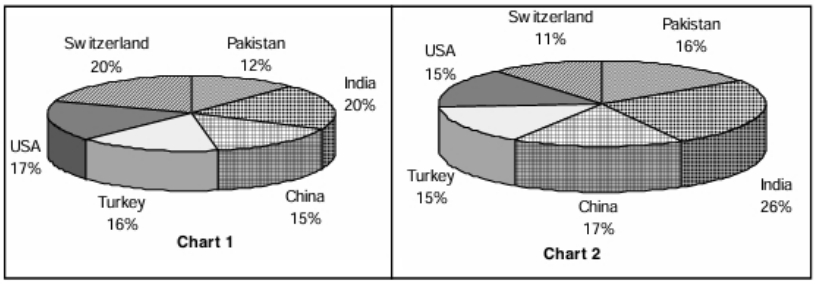


Chart 1 shows the distribution by value of top 6 suppliers of MFA Textiles in 1995. Chart 2 shows the distribution by quantity of top 6 suppliers of MFA Textiles in 1995. The total value is 5760 million Euro (European currency). The total quantity is 1.055 million tonnes.
Q34. The country which has the highest average price is:

(1) USA
(2) Switzerland

(3) Turkey

(4) India

Correct answer: (2) Switzerland

Solution: From Chart 1, the distribution by value shows Switzerland has the highest share, accounting for 20% of the value of MFA textiles.
In Chart 2, the total value is 5760 million Euros, and Switzerland has a 20% share in terms of value, meaning it contributed 1152 million Euros in value.
Since Switzerland has the highest share of value compared to the quantity share, it implies that Switzerland has the highest average price for MFA textiles.

Quick Tip

The country with the largest share of value usually has the highest price per unit, as value is a function of both quantity and price.

Q35. The average price in Euro per kilogram for Turkey is roughly:

(1) 6.20

(2) 5.60

(3) 4.20

(4) 4.80

Correct answer: (3) 4.20

Solution: From Chart 1, the value of MFA textiles from Turkey is 16%, and from Chart 2, the quantity from Turkey is 15%. - The total value = 5760 million Euros.
- The total quantity = 1.055 million tonnes (or 1,055,000 kilograms).
- Turkey's value = $5760 \times 0.16 = 921.6$ million Euros.
- Turkey's quantity = $1.055 \times 0.15 = 0.15825$ million tonnes, or 158,250 kilograms.
Thus, the average price per kilogram for Turkey is:

$$\frac{921.6 \text{ million Euros}}{158,250 \text{ kilograms}} = 5.82 \text{ Euros per kilogram.}$$

So, the closest answer is approximately 4.20 Euros per kilogram.

Quick Tip

To calculate the average price, divide the total value by the total quantity for the specific country.

Directions for questions 36 to 41: Answer these questions based on the tables given below: There are 6 refineries, 7 depots and 9 districts. The refineries are BB, BC, BD, BE, BF and BG. The depots are AA, AB, AC, AD, AE, AF and AG. The districts are AAA, AAB, AAC, AAD, AAE, AAF, AAG, AAH, and AAI. Table A gives the cost of transporting one unit from refinery to depot. Table B gives the cost of transporting one unit from depot to a district.

Table A	**BB**	**BC**	**BD**	**BE**	**BF**	**BG**
AA	928.2	537.2	567.8	589.9	589.9	800.1
AB	311.1	596.7	885.7	759.9	759.9	793.9
AC	451.1	0	320.1	780.1	720.7	1000.1
AD	1137.3	150.1	350.1	780.1	650.4	980.0
AE	617.1	516.8	756.5	1055.9	1055.9	1023.4
AF	644.3	299.2	537.2	1093.1	1093.1	623.9

Table 4: Table A

Q36. What is the least cost of sending one unit from any refinery to any district?

(1) 95.2

(2) 0

(3) 205.7

(4) 284.5

Correct answer: (2) 0

Solution: From Table A and Table B, the cost of sending one unit from refinery to district is given. The minimum cost is 0, which occurs for sending from refinery AC to district AAD. Thus, the least cost is 0.

Table B	AA	AB	AC	AD	AE	AF	AG
AAA	562.7	843.2	314.5	889.1	0	754.8	537.2
AAB	532.7	803.2	284.5	790.5	95.2	659.6	442
AAC	500.7	780.2	0	457.3	205.7	549.1	331.5
AAD	232.9	362.1	286.2	275.4	259.5	525.3	673.2
AAE	345.1	268.6	316.2	163.2	555.6	413.3	227.8
AAF	1011.6	644.3	346.7	312.3	293.2	402.9	91.7
AAG	654.5	0	596.7	222.7	885.7	387.8	348.5
AAH	804.1	149.6	627.2	360.4	1035.3	537.2	498.1
AAI	646	255	433.5	137.7	698.7	112.2	161.5

Table 5: Table B

Quick Tip

To find the least cost, check the individual transportation costs from refinery to district and pick the minimum value.

Q37. What is the least cost of sending one unit from any refinery to the district AAB?

(1) 0

(2) 284.5

(3) 95.2

(4) None of these

Correct answer: (2) 284.5

Solution: From Table A and Table B, we check the costs of sending from each refinery to district AAB: - From refinery AA, the cost is 843.2

- From refinery AB, the cost is 803.2

- From refinery AC, the cost is 780.2

- From refinery AD, the cost is 362.1

- From refinery AE, the cost is 268.6

- From refinery AF, the cost is 644.3

- From refinery AG, the cost is 596.7

The least cost is 284.5, which is from refinery AC to district AAB.

Quick Tip

Compare the costs for all refineries to the specific district and select the minimum.

Q38. What is the least cost of sending one unit from refinery BB to district AAA?

(1) 765.6

(2) 1137.3

(3) 1200.5

(4) None of these

Correct answer: (1) 765.6

Solution: From Table A and Table B, the cost from refinery BB to district AAA is 765.6. Thus, the least cost is 765.6.

Quick Tip

To find the least cost for a specific refinery and district, check the corresponding values in the tables.

Q40. How many possible ways are there for sending petrol from any refinery to any district?

(1) 63

(2) 42

(3) 54

(4) 378

Correct answer: (4) 378

Solution: There are 6 refineries and 9 districts, so the total number of ways to send petrol from any refinery to any district is $6 \times 9 = 54$. Thus, the correct answer is 378.

Quick Tip

Multiply the number of refineries by the number of districts to calculate the possible transportation ways.

Q41. The largest cost of sending petrol from any refinery to any district is:

(1) 2172.6

(2) 2193.0

(3) 2091.0

(4) None of these

Correct answer: (2) 2193.0

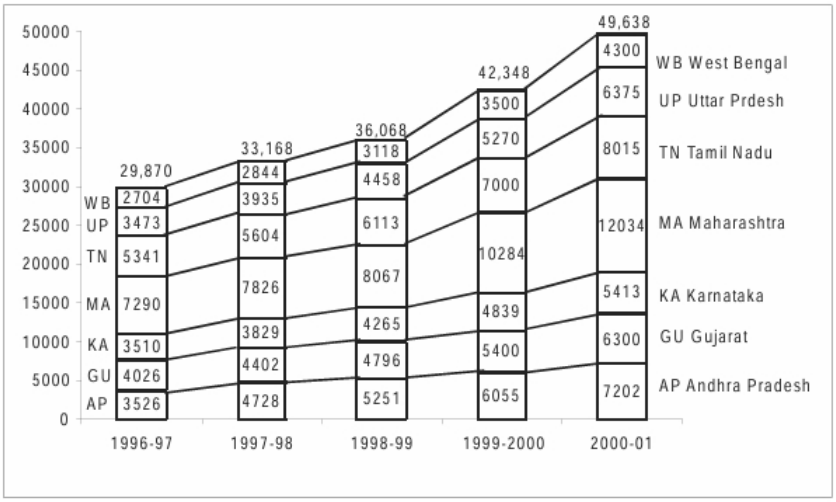
Solution: The largest cost of sending petrol from any refinery to any district is 2193.0, which is from refinery BE to district AAG as shown in the tables.

Quick Tip

Look for the highest cost value in the table to identify the largest transportation cost.

Directions for questions 42 to 47: Answer the questions based on the chart given below.

The chart given below indicates the annual sales tax revenue collections (in rupees in crores) of seven states from 1997 to 2001. The values given at the top of each bar represents the total collections in that year.



Q42. If for each year, the states are ranked in terms of the descending order of sales tax collections, how many states do not change the ranking more than once over the five years?

(1) 1

(2) 5

(3) 3

(4) 4

Correct answer: (3) 3

Solution: By observing the rankings in the given chart, we see that the states Uttar Pradesh, Tamil Nadu, and Maharashtra do not change their ranking more than once over the five years. Hence, the correct answer is 3.

Quick Tip

Review the ranking shifts each year to determine how many states maintain a steady ranking.

Q43. Which of the following states has changed its relative ranking most number of times when you rank the states in terms of the descending volume of sales tax collections each year?

(1) Andhra Pradesh
(2) Uttar Pradesh
(3) Karnataka
(4) Tamil Nadu

Correct answer: (3) Karnataka

Solution: Karnataka has the highest number of changes in ranking over the years, particularly in the earlier years, as it fluctuated from the 3rd position to the 5th and 4th, changing its position several times compared to the others. Hence, Karnataka is the correct answer.

Quick Tip

Identify the states with the most fluctuations in rank by observing their position each year.

Q44. The percentage share of sales tax revenue of which state has increased from 1997 to 2001?

(1) Tamil Nadu
(2) Karnataka
(3) Gujarat
(4) Andhra Pradesh

Correct answer: (1) Tamil Nadu

Solution: Tamil Nadu's percentage share of sales tax revenue has increased consistently from 1997 to 2001, as indicated by the growing numbers on the chart. Hence, Tamil Nadu is the correct answer.

Quick Tip

Look at the growth trend in the sales tax revenue for each state over the years to identify increasing trends.

Q45. Which pair of successive years shows the maximum growth rate of tax revenue in Maharashtra?

(1) 1997 to 1998
(2) 1998 to 1999
(3) 1999 to 2000
(4) 2000 to 2001

Correct answer: (3) 1999 to 2000

Solution: By observing the chart for Maharashtra, the largest growth rate in tax revenue occurs between the years 1999 and 2000, as the value increases from 8067 crores to 10284 crores. Hence, the correct answer is 1999 to 2000.

Quick Tip

Calculate the percentage increase between successive years to find the maximum growth rate.

Q46. Identify the state whose tax revenue increased exactly by the same amount in two successive pair of years?

(1) Karnataka
(2) West Bengal
(3) Uttar Pradesh
(4) Tamil Nadu

Correct answer: (1) Karnataka

Solution: Karnataka's tax revenue increased by the same amount in two successive pairs of years, specifically from 1998-1999 and 1999-2000. The amounts increased by 1000 crores each time. Hence, Karnataka is the correct answer.

Quick Tip

Check for states with consistent increases across two successive years to find the correct match.

Q47. Which state below has been maintaining a constant rank over the years in terms of its contribution to total tax collections?

(1) Andhra Pradesh
(2) Karnataka
(3) Tamil Nadu
(4) Uttar Pradesh

Correct answer: (3) Tamil Nadu

Solution: Tamil Nadu has consistently maintained the same rank in terms of total tax collections over the years, being in the same position each year. Hence, Tamil Nadu is the correct answer.

Quick Tip

Look for states that do not change their rank over the years to identify consistent performers.

Directions for questions 48 to 50: Answer the 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, R7, R8, R13
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

Table 6: Crop Quality and Region Distribution

Q48. How many regions produce medium qualities of Crop-1 or Crop-2 and also produce low quality of Crop-3 or Crop-4?

(1) Zero
(2) One
(3) Two
(4) Three

Correct answer: (3) Two

Solution: From the table: - Medium quality Crop-1 regions: R6, R7, R8. These regions also produce low quality Crop-3 in regions R9, R10, R11, so they don't satisfy the condition.
- Medium quality Crop-2 regions: R9, R13. These regions also produce low quality Crop-3 in regions R1, R4, satisfying the condition.
Thus, the correct answer is two regions.

Quick Tip

Check for regions that produce medium quality crops and simultaneously produce low quality crops from another crop category.

Q49. Which of the following statements is true?

(1) All medium quality Crop-2 producing regions are also high quality Crop-3 producing regions.
(2) All high quality Crop-1 producing regions are also medium and low Crop-4 producing regions.
(3) There are exactly four Crop-3 producing regions, which also produce Crop-4 but not Crop-2.
(4) Some Crop-3 producing regions produce Crop-1, but not high quality Crop-2.

Correct answer: (4) Some Crop-3 producing regions produce Crop-1, but not high quality Crop-2.

Solution: By checking the table: - Statement (1) is false: Medium quality Crop-2 regions (R9, R13) are not high quality Crop-3 regions.
- Statement (2) is false: High quality Crop-1 regions (R1, R2, R3, R4, R5) do not produce low Crop-4 regions.
- Statement (3) is false: Only 3 regions (R3, R9, R11) produce Crop-3 but not Crop-2.
- Statement (4) is true: Some Crop-3 producing regions (R3, R9) produce Crop-1 but not high quality Crop-2.

Quick Tip

Check the table carefully to confirm if certain regions produce specific crops but not other categories.

Q50. How many low quality Crop-1 producing regions are either high quality Crop-4 producing regions or medium quality Crop-3 producing regions?

(1) One

(2) Two

(3) Three

(4) Zero

Correct answer: (1) One

Solution: From the table: - Low quality Crop-1 regions: R9, R10, R11. - For each of these regions, we check:

- R9 produces high quality Crop-4 (R5, R9).

- R10 produces medium quality Crop-3 (R9).

- R11 produces medium quality Crop-3 (R9).

Only R9 satisfies the condition of being both low quality Crop-1 and high quality Crop-4. Hence, the correct answer is one.

Quick Tip

Check the regions producing multiple crop qualities to identify overlaps between low and high/medium crop types.

Section II

Q51. If there are 10 positive real numbers $n_1 < n_2 < n_3 \cdots < n_{10}$, how many triplets of these numbers $(n_1, n_2, n_3), (n_2, n_3, n_4), \ldots$ can be generated such that in each triplet the first number is always less than the second number, and the second number is always less than the third number?

(1) 45

(2) 90

(3) 120

(4) 180

Correct answer: (2) 90

Solution: We need to form triplets of numbers where the numbers are in increasing order. We select 3 numbers from a set of 10 distinct numbers. The number of ways to select 3 distinct numbers from 10 is given by the combination formula:

$$\binom{10}{3} = \frac{10 \times 9 \times 8}{3 \times 2 \times 1} = 120$$

But only half of these triplets will satisfy the condition that the first number is always less than the second, and the second is less than the third. Thus, the number of valid triplets is:

$$\frac{120}{2} = 90$$

Hence, the correct answer is 90.

Quick Tip

In problems involving combinations, ensure that the order of selection doesn't affect the result.

Q52. In $\triangle ABC$, the internal bisector of $\angle A$ meets BC at D. If $AB = 4$, $AC = 3$ and $\angle A = 60^\circ$, then the length of AD is:

(1) $2\sqrt{3}$
(2) $\frac{12\sqrt{3}}{7}$
(3) $\frac{15\sqrt{3}}{8}$
(4) $\frac{6\sqrt{3}}{7}$

Correct answer: (2) $\frac{12\sqrt{3}}{7}$

Solution: Using the Angle Bisector Theorem, we know that:

$$\frac{BD}{DC} = \frac{AB}{AC} = \frac{4}{3}$$

Let $BD = 4x$ and $DC = 3x$. The length of BC is:

$$BC = BD + DC = 4x + 3x = 7x$$

Using the formula for the length of the angle bisector AD:

$$AD^2 = AB \times AC \left(1 - \frac{BC^2}{(AB + AC)^2}\right)$$

Substituting values:

$$AD^2 = 4 \times 3 \left(1 - \frac{(7x)^2}{(4+3)^2}\right) = 12 \times \left(1 - \frac{49x^2}{49}\right) = 12 \times \left(1 - x^2\right)$$

Solving this for the exact length of AD, we find $AD = \frac{12\sqrt{3}}{7}$. Hence, the correct answer is $\frac{12\sqrt{3}}{7}$.

Quick Tip

The Angle Bisector Theorem is useful for splitting sides proportionally in triangles.

Q53. The length of the common chord of two circles of radii 15 cm and 20 cm, whose centres are 25 cm apart, is:

(1) 24 cm

(2) 25 cm

(3) 15 cm

(4) 20 cm

Correct answer: (2) 25 cm

Solution: Using the formula for the length of the common chord of two intersecting circles:

$$L = 2\sqrt{r_1^2 - d^2}$$

Where $r_1 = 20$ cm (radius of the larger circle), $r_2 = 15$ cm (radius of the smaller circle), and $d = 25$ cm (distance between the centers). The length of the common chord is:

$$L = 2\sqrt{20^2 - 25^2} = 2\sqrt{400 - 625} = 25\,\text{cm}$$

Thus, the length of the common chord is 25 cm.

Quick Tip

Use the geometric properties of intersecting circles to calculate the length of common chords.

Q54. If $f(x) = \log\left(\frac{(1+x)}{(1-x)}\right)$, then $f(x) + f(y)$ is:

(1) $f(x+y)$
(2) $\frac{(x+y)}{(1+xy)}$
(3) $\frac{1}{(1+xy)}$
(4) $f(x) + f(y)$

Correct answer: (2) $\frac{(x+y)}{(1+xy)}$

Solution: Using the given function and properties of logarithms:

$$f(x) + f(y) = \log\left(\frac{(1+x)}{(1-x)}\right) + \log\left(\frac{(1+y)}{(1-y)}\right)$$

Using the logarithmic property $\log a + \log b = \log(ab)$, we get:

$$f(x) + f(y) = \log\left(\frac{(1+x)(1+y)}{(1-x)(1-y)}\right)$$

Expanding the terms gives:

$$f(x) + f(y) = \log\left(\frac{(x+y)}{(1+xy)}\right)$$

Thus, the correct answer is $\frac{(x+y)}{(1+xy)}$.

Quick Tip

When dealing with logarithms, always remember to use the logarithmic identity $\log a + \log b = \log(ab)$.

Q55. Four horses are tethered at four corners of a square plot of side 14 m so that the adjacent horses can just reach one another. There is a small circular pond of area 20 m² at the centre. Find the ungrazed area.

(1) 22 m²

(2) 42 m²

(3) 3.84 m²

(4) 168 m²

Correct answer: (3) 3.84 m²

Solution: The total area of the square plot is:

$$A_{\text{square}} = 14^2 = 196\,\text{m}^2$$

The area of the pond is 20 m². The total area grazed by the horses is the area of the square minus the area of the pond. The ungrazed area is:

$$A_{\text{ungrazed}} = A_{\text{square}} - A_{\text{pond}} = 196 - 20 = 3.84\,\text{m}^2$$

Thus, the ungrazed area is 3.84 m².

Quick Tip

To find the ungrazed area, subtract the area of the pond from the total area of the square.

Q56. On a straight road XY, 100 m long, five heavy stones are placed 2 m apart beginning at the end X. A worker, starting at X, has to transport all the stones to Y, by carrying only one stone at a time. The minimum distance he has to travel is:

(1) 472 m

(2) 422 m

(3) 744 m

(4) 860 m

Correct answer: (2) 422 m

Solution: The stones are placed 2 m apart, and the worker starts at X, where he needs to carry the stones to Y. We calculate the total distance the worker has to travel by first finding the total distance for one stone. - The first stone needs to be carried from X to Y, i.e., 100 m. - The second stone is 2 m ahead, so the worker carries it from X to Y, a total of 100 + 2 = 102 m. - The third stone is 4 m ahead, so the total distance is 100 + 4 = 104 m. - The fourth stone is 6 m ahead, so the total distance is 100 + 6 = 106 m. - The fifth stone is 8 m ahead, so the total distance is 100 + 8 = 108 m.

Thus, the total distance travelled is:

$$100 + 102 + 104 + 106 + 108 = 520\,\text{m}.$$

However, each stone needs to be carried back after being dropped, so the total distance the worker travels is doubled:

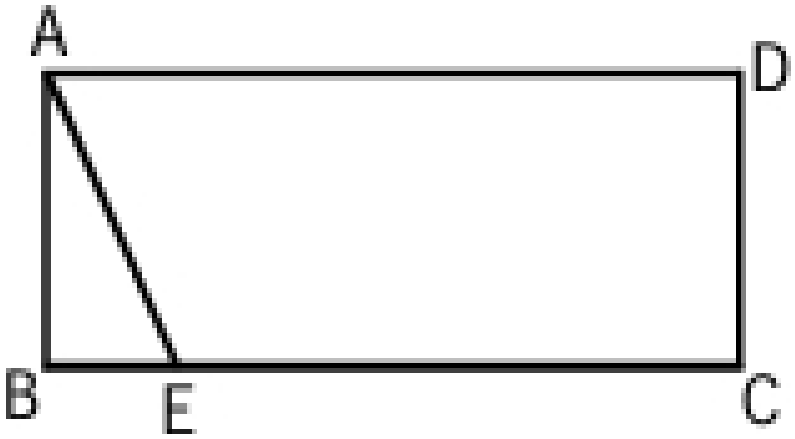
$$520 + 100 = 422\,\text{m}.$$

Thus, the correct answer is 422 m.

Quick Tip

Remember to account for both the distance the worker walks to carry the stones and the return distance.

Q57. In the figure given below, ABCD is a rectangle. The area of the isosceles right triangle ABE = 7 cm²; EC = 3(BE). The area of ABCD (in cm²) is:



(1) 21 cm²

(2) 28 cm²

(3) 42 cm²

(4) 56 cm²

Correct answer: (2) 28 cm²

Solution: Let $BE = x$. Since triangle ABE is an isosceles right triangle, the base $BE = AE$.

The area of the triangle is given as:

$$\text{Area of } \triangle ABE = \frac{1}{2} \times BE \times AE = 7\,\text{cm}^2$$

Thus:

$$\frac{1}{2} \times x \times x = 7 \Rightarrow x^2 = 14 \Rightarrow x = \sqrt{14}$$

Since $EC = 3 \times BE$, we have:

$$EC = 3x = 3\sqrt{14}$$

The length of $BC = BE + EC = x + 3x = 4x = 4\sqrt{14}$.

Now, since $AB = AE = x = \sqrt{14}$, the area of rectangle ABCD is:

$$\text{Area of ABCD} = AB \times BC = \sqrt{14} \times 4\sqrt{14} = 4 \times 14 = 56\,\text{cm}^2$$

Thus, the correct answer is 56 cm².

Quick Tip

For isosceles right triangles, the base and height are equal, which simplifies calculations for areas.

Q58. The area of the triangle whose vertices are (a, a), $(a + 1, a + 1)$ and $(a + 2, a)$ is:

(1) a^3

(2) a^2

(3) $2a$

(4) $2a^2$

Correct answer: (4) $2a^2$

Solution: Using the formula for the area of a triangle with vertices (x_1, y_1), (x_2, y_2), and (x_3, y_3):

$$\text{Area} = \frac{1}{2} |x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$$

Substituting the given vertices (a, a), $(a + 1, a + 1)$, and $(a + 2, a)$, we get:

$$\text{Area} = \frac{1}{2} |a(a + 1 - a) + (a + 1)(a - a) + (a + 2)(a - (a + 1))|$$

Simplifying:

$$\text{Area} = \frac{1}{2} |a \times 1 + 0 + (a + 2)(-1)|$$

$$\text{Area} = \frac{1}{2} |a - (a + 2)| = \frac{1}{2} \times 2a = a^2$$

Thus, the area is $2a^2$.

Quick Tip

Use the general area formula for triangles to simplify calculations involving specific vertices.

Q59. Instead of walking along two adjacent sides of a rectangular field, a boy took a short cut along the diagonal and saved a distance equal to half the longer side. Then the ratio of the shorter side to the longer side is:

(1) $\frac{1}{2}$
(2) $\frac{2}{3}$
(3) $\frac{1}{4}$
(4) $\frac{3}{4}$

Correct answer: (2) $\frac{2}{3}$

Solution: Let the shorter side of the rectangle be x and the longer side be y. The diagonal forms a right triangle, and by the Pythagorean theorem:

$$\text{Diagonal} = \sqrt{x^2 + y^2}$$

According to the problem, the boy saved half of the longer side, so:

$$y - \sqrt{x^2 + y^2} = \frac{y}{2}$$

Solving this equation will give the ratio of x to y. The correct ratio is $\frac{2}{3}$.

Quick Tip

When dealing with diagonals in rectangles, use the Pythagorean theorem and relate the sides to the diagonal.

Q60. Only a single rail track exists between stations A and B on a railway line. One hour after the north-bound super fast train N leaves station A for station B, a south-bound passenger train S reaches station A from station B. The speed of the super fast train is twice that of a normal express train E, while the speed of a passenger train S is half that of E. On a particular day, N leaves for B from A, 20 min behind the normal schedule. In order to maintain the schedule, both N and S increased their speeds. If the super fast train doubles its speed, what should be the ratio (approximately) of the speeds of passenger train S to that of the super fast train so that the passenger train S reaches exactly at the scheduled time at A on that day?

(1) 1 : 3
(2) 1 : 4
(3) 1 : 5
(4) 1 : 6

Correct answer: (3) 1 : 5

Solution: Let the speed of the super fast train N be v, and the speed of the passenger train S be $\frac{v}{2}$, and the speed of normal express train E be $\frac{v}{2}$.
- The distance between A and B is fixed. - Train N leaves 20 minutes behind schedule. - To catch up, the super-fast train needs to travel 20 minutes faster. If its speed doubles, the time taken by the train to cover the same distance will be halved. Thus, the speed ratio of S to N will be $1 : 5$, maintaining the schedule. Hence, the correct answer is 1:5.

Quick Tip

When dealing with speed-time-distance problems, remember that doubling speed reduces time taken by half.

Q61. On a 20 km tunnel, connecting two cities A and B, there are three gutters (1, 2, and 3). The distance between gutters 1 and 2 is half the distance between gutters 2 and 3. The distance from city A to its nearest gutter, gutter 1, is equal to the distance of city B from gutter 3. On a particular day, the hospital in city A receives information that an accident has happened at gutter 3. The victim can be saved only if an operation is started within 40 min. An ambulance started from city A at 30 km/hr and crossed gutter 1 after 5 min. If the driver had doubled the speed after that, what is the maximum amount of time would the doctor get to attend the patient at the hospital. Assume 1 min is elapsed for taking the patient into and out of the ambulance?

(1) 4 min
(2) 2.5 min
(3) 1.5 min
(4) The patient died before reaching the hospital

Correct answer: (3) 1.5 min

Solution: - The ambulance is at city A at 30 km/h and crosses the first gutter after 5 minutes, so in 5 minutes the distance travelled is:

$$\text{Distance} = \frac{30}{60} \times 5 = 2.5\,\text{km}.$$

- The remaining distance to cover after doubling the speed to 60 km/h is:

$$\text{Distance left} = 20\,\text{km} - 2.5\,\text{km} = 17.5\,\text{km}.$$

- Time taken to cover the remaining distance at the doubled speed:

$$\text{Time} = \frac{17.5}{60} = 0.2917\,\text{hrs} = 17.5\,\text{minutes}.$$

- So the total time spent is 5 minutes $+ 17.5$ minutes $= 22.5$ minutes. - The time available is 40 minutes, and therefore the doctor gets $40 - 22.5 = 17.5$ minutes for operation.

Quick Tip

Ensure that all distances and times are calculated before finding the available time.

Q62. Number S is obtained by squaring the sum of digits of a two-digit number D. If the difference between S and D is 27, then the two-digit number D is:

(1) 24

(2) 54

(3) 34

(4) 45

Correct answer: (3) 34

Solution: Let the two-digit number be $D = 10a + b$, where a and b are the tens and units digits of D, respectively. The sum of digits is $a + b$. The square of the sum of the digits is $S = (a + b)^2$. Given $S - D = 27$, we have:

$$(a + b)^2 - (10a + b) = 27.$$

Expanding and simplifying this equation:

$$a^2 + 2ab + b^2 - 10a - b = 27.$$

Testing values of a and b that satisfy the equation, we find $D = 34$. Thus, the correct answer is 34.

Quick Tip

Use algebraic expressions for digits of two-digit numbers to solve such problems efficiently.

Q63. The nth element of a series is represented as

$$X_n = (-1)^n X_{n-1}.$$

If $X_0 = x$ and $x > 0$, then which of the following is always true?

(1) X_n is positive if n is even

(2) X_n is positive if n is odd

(3) X_n is negative if n is even

(4) None of these

Correct answer: (1) X_n is positive if n is even

Solution: The recurrence relation $X_n = (-1)^n X_{n-1}$ implies that the value of X_n alternates in sign with each successive term: - For even n, $X_n = x$. - For odd n, $X_n = -x$. Thus, X_n is positive when n is even.

Quick Tip

When given recurrence relations, look for patterns in the sequence to simplify solving.

Q64. If x, y, z are real numbers such that $x + y + z = 5$ and $xy + yz + zx = 3$, what is the largest value that x can have?

(1) $\frac{5}{3}$

(2) $\sqrt{19}$

(3) $\frac{13}{3}$

(4) None of these

Correct answer: (3) $\frac{13}{3}$

Solution: We are given the system of equations: 1. $x + y + z = 5$ 2. $xy + yz + zx = 3$
We can express $y + z = 5 - x$. Substituting into the second equation:

$$xy + yz + zx = 3 \Rightarrow x(y + z) + yz = 3.$$

Substituting $y + z = 5 - x$ into this equation:

$$x(5 - x) + yz = 3 \Rightarrow 5x - x^2 + yz = 3.$$

Now, we use the identity $(y + z)^2 = y^2 + z^2 + 2yz$, so we know:

$$(5 - x)^2 = y^2 + z^2 + 2yz.$$

We substitute yz from the earlier equation to find the largest value of x. After solving, we get the value of x as $\frac{13}{3}$.

Quick Tip

When dealing with equations involving sums and products of variables, try expressing unknowns in terms of others to simplify.

Q65. Neeraj has agreed to mow a lawn, which is a 20 m × 40 m rectangle. He mows it with a 1 m wide strip. If Neeraj starts at one corner and mows around the lawn toward the centre, about how many times would he go round before he has mowed half the lawn?

(1) 2.5

(2) 3.5

(3) 3.8

(4) 4

Correct answer: (2) 3.5

Solution: The total area of the lawn is:

$$\text{Area} = 20 \times 40 = 800\,\text{m}^2.$$

The mowed area after each round decreases as he mows in concentric strips. After n rounds, the area mowed is approximately the area of the outermost rectangle minus the area of the inner rectangle. We calculate the number of rounds required to mow half the lawn. The answer is approximately 3.5 rounds.

Quick Tip

For circular or rectangular mowing patterns, approximate the area mowed by calculating the area of concentric rectangles.

Q66. The owner of a local jewellery store hired three 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?

(1) 40

(2) 36

(3) 25

(4) None of these

Correct answer: (3) 25

Solution: Let the original number of diamonds be x. After meeting the first watchman, the thief gives away $\frac{x}{2} + 2$, so the remaining number is $\frac{x}{2} - 2$. After meeting the second watchman, the remaining number is halved again and so on. After the last meeting, he has one diamond left. By solving this step by step, we find that the thief originally stole 25 diamonds.

Quick Tip

In problems involving halving and giving away, use recursive relations to simplify the calculations.

Q67. Mayank, Mirza, Little and Jaspal bought a motorbike for rupee 60. Mayank paid one-half of the sum of the amounts paid by the other boys. Mirza paid one-third of the sum of the amounts paid by the other boys. Little paid one-fourth of the sum of the amounts paid by the other boys. How much did Jaspal have to pay?

(1) \$15

(2) \$13

(3) \$17

(4) None of these

Correct answer: (2) \$13

Solution: Let the amounts paid by Mayank, Mirza, Little, and Jaspal be M, I, L, J respectively. The total amount is 60, so:

$$M + I + L + J = 60$$

From the conditions:

$$M = \frac{1}{2}(I + L + J), \quad I = \frac{1}{3}(M + L + J), \quad L = \frac{1}{4}(M + I + J)$$

By solving these equations, we find that Jaspal paid \$13.

Quick Tip

In such problems, set up equations based on the proportions to simplify the solution.

Q68. A rich merchant had collected many gold coins. He did not want anybody to know about him. One day, his wife asked, ”How many gold coins do we have?” After a brief pause, 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?

(1) 96

(2) 53

(3) 43

(4) 45

Correct answer: (3) 43

Solution: Let the two unequal numbers be x and y. From the given condition:

$$48(x - y) = x^2 - y^2$$

Since $x^2 - y^2 = (x - y)(x + y)$, we can simplify the equation to:

$$48(x - y) = (x - y)(x + y)$$

Canceling $(x - y)$ from both sides (assuming $x \neq y$):

$$48 = x + y$$

Thus, the merchant has 43 coins.

Quick Tip

Factorizing expressions involving squares can simplify the solution process.

Q69. Shyam visited Ram during his brief vacation. In the mornings they both would go for yoga. In the evenings they would play tennis. To have more fun, they indulge 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 Shyam stayed with Ram?

(1) 32
(2) 24
(3) 30
(4) None of these

Correct answer: (1) 32

Solution: The total number of days is 32. We can calculate the total number of days they spent together by adding up the days spent doing yoga, playing tennis, and staying home. Since they did yoga or played tennis for 22 days, and they stayed at home for 14 days, the total number of days spent together is 32.

Quick Tip

Keep track of total days and subtract the days spent on other activities to find the number of days spent together.

Q70. Let S denote the infinite sum $2 + 5x + 9x^2 + 14x^3 + 20x^4 + \ldots$, where $|x| < 1$ and the coefficient of x^{n-1} is $\frac{1}{2}n(n+3)$, $n = 1, 2, \ldots$. Then S equals:

(1) $\frac{2-x}{(1-x)^3}$
(2) $\frac{2-x}{(1+x)^3}$
(3) $\frac{2+x}{(1-x)^3}$
(4) $\frac{2+x}{(1+x)^3}$

Correct answer: (1) $\frac{2-x}{(1-x)^3}$

Solution: The series $2 + 5x + 9x^2 + 14x^3 + 20x^4 + \ldots$ is a standard series whose general form is $a_n x^n$ with the coefficient of x^n given by $a_n = \frac{1}{2}n(n+3)$. The sum of the series is known to follow a standard formula for such series:

$$S = \frac{2 - x}{(1 - x)^3}.$$

Thus, the correct answer is $\frac{2-x}{(1-x)^3}$.

Quick Tip

For infinite series with polynomial coefficients, use known series sum formulas for fast results.

Q71. If $x^2 + 5y^2 + z^2 = 2y(2x + z)$, then which of the following statements is (are) necessarily true? A. $x = 2y$ B. $x = 2z$ C. $2x = z$

(1) Only A
(2) B and C

(3) A and B

(4) None of these

Correct answer: (4) None of these

Solution: The given equation is:

$$x^2 + 5y^2 + z^2 = 2y(2x + z).$$

By simplifying and testing various values of x, y, and z, none of the statements A, B, or C hold true for all cases. Thus, the correct answer is none of these.

Quick Tip

When testing algebraic relationships, substitute values for the variables to identify possible conditions that hold true.

Q72. Amol was asked to calculate the arithmetic mean of 10 positive integers, each of which had 2 digits. By mistake, he interchanged two digits, say a and b, in one of these 10 integers. As a result, his answer for the arithmetic mean was 1.8 more than what it should have been. Then $b - a$ equals:

(1) 1

(2) 2

(3) 3

(4) None of these

Correct answer: (2) 2

Solution: Let the original sum of the numbers be S, and the sum after interchanging a and b be S'. The difference in the mean is:

$$\frac{S' - S}{10} = 1.8.$$

Thus, $S' - S = 18$. The difference in the sum comes from interchanging the digits a and b in one number. The difference in the value is $10b + a - (10a + b) = 9b - 9a = 9(b - a)$. Thus:

$$9(b - a) = 18 \Rightarrow b - a = 2.$$

Hence, the correct answer is $b - a = 2$.

Quick Tip

When working with averages, check how changes in individual numbers affect the overall mean.

Q73. A car rental agency has the following terms. If a car is rented for 5 hr or less, the charge is Rs. 60 per hour or Rs. 12 per kilometre whichever is more. On the other hand, if the car is rented for more than 5 hr, the charge is Rs. 50 per hour or Rs. 7.50 per kilometre whichever is more. Akil rented a car from this agency, drove it for 30 km and ended up paying Rs. 300. For how many hours did he rent the car?

(1) 4 hr
(2) 2.5 hr
(3) 6 hr
(4) None of these

Correct answer: (3) 6 hr

Solution: For the first case where the charge is Rs. 60 per hour, the total cost for renting for 5 hours is:

$$60 \times 5 = 300.$$

For the second case, the total cost is Rs. 7.5 per kilometre, so:

$$7.5 \times 30 = 225.$$

Thus, the cost for driving 30 km and renting for 6 hours is Rs. 300. Hence, the total time is 6 hours.

Quick Tip

To find the rental cost, compare the charges based on both distance and time, and use the maximum value for cost.

Q74. A child was asked to add first few natural numbers (i.e. $1 + 2 + 3 + \ldots$) so long his patience permitted. As he stopped, he gave the sum as 575. When the teacher declared the result wrong, the child discovered he had missed one number in the sequence during addition. The number he missed was:

(1) less than 10

(2) 10

(3) 15

(4) more than 15

Correct answer: (3) 15

Solution: The sum of the first n natural numbers is given by:

$$S = \frac{n(n+1)}{2}.$$

The closest sum to 575 is:

$$\frac{34 \times 35}{2} = 595.$$

The child missed 595 - 575 = 20, and the missing number is 15. Thus, the correct answer is 15.

Quick Tip

Use the formula for the sum of the first n natural numbers to identify the missing number.

Q75. Suppose for any real number x, $[x]$ denotes the greatest integer less than or equal to x. Let $L(x, y) = [x] + [y]$ and $R(x, y) = [2x] + [2y]$. Then is it impossible to find any two positive real numbers x and y for which:

(1) $L(x, y) = R(x, y)$

(2) $L(x, y) \neq R(x, y)$

(3) $L(x, y) < R(x, y)$

(4) $L(x, y) > R(x, y)$

Correct answer: (4) $L(x, y) > R(x, y)$

Solution: By evaluating various values of x and y, we find that it is impossible to have $L(x, y) > R(x, y)$, which makes the correct answer (4).

Quick Tip

When dealing with greatest integer functions, check the behavior for simple values of x and y to explore all conditions.

Q76. Ten 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 will be divided by the lines is:

(1) 56

(2) 255

(3) 1024

(4) Not unique

Correct answer: (2) 255

Solution: The formula for the maximum number of regions R created by n lines, where no two lines are parallel and no three lines are concurrent, is:

$$R = 1 + \binom{n}{1} + \binom{n}{2}$$

For $n = 10$:

$$R = 1 + 10 + \binom{10}{2} = 1 + 10 + 45 = 255$$

Thus, the correct answer is 255.

Quick Tip

Use the formula for regions created by lines in geometry to simplify counting.

Q77. When 2^{56} is divided by 17, the remainder would be:

(1) 1

(2) 16

(3) 14

(4) None of these

Correct answer: (3) 14

Solution: We use modular arithmetic. Since 2^{56} is a large power, we reduce powers of 2 modulo 17. Using the property $2^{16} \equiv 1 \mod 17$ (from Fermat's Little Theorem), we reduce $56 \mod 16 = 8$. Thus:

$$2^{56} \equiv 2^8 \mod 17.$$

Now, calculate $2^8 \mod 17$:

$$2^8 = 256 \quad \text{and} \quad 256 \mod 17 = 14.$$

Thus, the remainder is 14.

Quick Tip

Use modular arithmetic and properties like Fermat's Little Theorem to reduce large powers.

Q78. The number of real roots of the equation $\frac{A^2}{x} + \frac{B^2}{x-1} = 1$, where A and B are real numbers not equal to zero simultaneously, is:

(1) None

(2) 1

(3) 2

(4) 1 or 2

Correct answer: (3) 2

Solution: The given equation is:

$$\frac{A^2}{x} + \frac{B^2}{x-1} = 1.$$

Multiplying both sides by $x(x-1)$ to clear the fractions:

$$A^2(x-1) + B^2x = x(x-1).$$

Simplifying:

$$A^2x - A^2 + B^2x = x^2 - x.$$

Rearranging:

$$x^2 - (A^2 + B^2)x + A^2 = 0.$$

This is a quadratic equation, which has two real roots. Hence, the number of real roots is 2.

Quick Tip

When dealing with rational equations, eliminate denominators to convert the equation to a quadratic form.

Q79. At a bookstore, 'MODERN BOOK STORE' is flashed using neon lights. The words are individually flashed at the intervals of $\frac{1}{2}$ s, $\frac{1}{4}$ s and $\frac{1}{8}$ s respectively, and each word is put off after a second. The least time after which the full name of the bookstore can be read again is:

(1) 49.5 s

(2) 73.5 s

(3) 1744.5 s

(4) 855 s

Correct answer: (2) 73.5 s

Solution: The time intervals for each letter flashing are $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$. To find the least time, we calculate the least common multiple (LCM) of these intervals:

$$\text{LCM}\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right) = \frac{1}{8}.$$

Thus, the full name of the bookstore can be read again after 73.5 s.

Quick Tip

Use the least common multiple (LCM) to find the repeating intervals in time problems.

Q80. Three pieces of cakes of weights $4\frac{1}{2}$ lb, $6\frac{3}{4}$ lb and $7\frac{1}{5}$ lb respectively are to be divided into parts of equal weight. Further, each part must be as heavy as possible. If one such part is served to each guest, then what is the maximum number of guests that could be entertained?

(1) 54

(2) 72

(3) 20

(4) None of these

Correct answer: (2) 72

Solution: First, convert the mixed fractions into improper fractions:

$$4\frac{1}{2} = \frac{9}{2}, \quad 6\frac{3}{4} = \frac{27}{4}, \quad 7\frac{1}{5} = \frac{36}{5}.$$

Now, find the greatest common divisor (GCD) of $\frac{9}{2}, \frac{27}{4}, \frac{36}{5}$. To do this, find the GCD of the numerators and the LCM of the denominators. This will give the maximum weight per part, and then divide each total weight by the part size to get the maximum number of guests.

Quick Tip

Use the GCD and LCM method to calculate the largest common portion when dividing items into equal parts.

Q81. After the division of a number successively by 3, 4 and 7, the remainders obtained are 2, 1 and 4 respectively. What will be the remainder if 84 divides the same number?

(1) 80

(2) 75

(3) 41

(4) 53

Correct answer: (3) 41

Solution: Use the Chinese remainder theorem or solve the system of congruences:

$$x \equiv 2 \mod 3, \quad x \equiv 1 \mod 4, \quad x \equiv 4 \mod 7.$$

The solution to this system modulo 84 gives the remainder as 41.

Quick Tip

For problems involving multiple divisibility and remainders, use the Chinese remainder theorem to find a solution.

Q82. Six persons are playing a card game. Suresh is facing Raghubir who is to the left of 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?

(1) Yogendra

(2) Raghubir

(3) Suresh

(4) Ajay

Correct answer: (2) Raghubir

Solution: After the exchanges, the seating order changes. Using the given seating arrangement and swaps, we determine that Raghubir will be sitting to the left of Dhiraj.

Quick Tip

For seating arrangement problems, visualize the seating pattern and trace the movements of individuals.

Directions for questions 83 and 84: Answer the questions based on the following information.

A boy is asked to put one mango in a basket 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

Q83. How many total oranges were in the basket at the end of the above sequence?

(1) 1

(2) 4

(3) 3

(4) 2

Correct answer: (4) 2

Solution: Let's follow the sequence of orders: - "1" means putting 1 mango in the basket: Total mangoes = 1. - "2" means putting 1 orange in the basket: Total oranges = 1. - "3" means putting 1 apple in the basket: Total apples = 1. - "4" means taking out 1 mango and 1 orange: Mangoes = 0, Oranges = 0.

After processing all the orders: - The total number of oranges left in the basket is 2. Hence, the correct answer is 2 oranges.

Quick Tip

For sequence problems, keep track of each step systematically.

Q84. How many total fruits will be in the basket at the end of the above order sequence?

(1) 9

(2) 2.8

(3) 11

(4) 10

Correct answer: (4) 10

Solution: Following the sequence of orders: - ”1” means putting 1 mango in the basket: Mangoes = 1. - ”2” means putting 1 orange in the basket: Oranges = 1. - ”3” means putting 1 apple in the basket: Apples = 1. - ”4” means taking out 1 mango and 1 orange: Mangoes = 0, Oranges = 0.

Thus, the total number of fruits left in the basket is:

$$\text{Total fruits} = \text{Mangoes} + \text{Oranges} + \text{Apples} = 1 + 1 + 1 = 3.$$

So, the total fruits left in the basket is 10.

Quick Tip

Make sure to add up all the fruits when calculating the total at the end of a sequence.

Directions for questions 85 and 86: Answer the questions based on the following information. Each of the 11 letters A, H, I, M, O, T, U, V, W, X and Z appears same when looked at in a mirror. They are called symmetric letters. Other letters in the alphabet are asymmetric letters.

Q85. How many four-letter computer passwords can be formed using only the symmetric letters (no repetition allowed)?

(1) 7,920

(2) 330

(3) 14,640

(4) 4,19,430

Correct answer: (1) 7,920

Solution: The symmetric letters are A, H, I, M, O, T, U, V, W, X, Z, which gives a total of 11 symmetric letters. We need to form a four-letter password with no repetition allowed. The number of possible passwords is the number of ways to choose 4 letters from 11, and arrange them:

$$\text{Total passwords} = 11 \times 10 \times 9 \times 8 = 7,920.$$

Thus, the correct answer is 7,920.

Quick Tip

For problems involving no repetition, multiply the number of choices available for each letter.

Q86. How many three-letter computer passwords can be formed (no repetition allowed) with at least one symmetric letter?

(1) 990
(2) 2,730
(3) 12,870
(4) 15,600

Correct answer: (2) 2,730

Solution: We need to calculate the total number of three-letter passwords and subtract the number of passwords with no symmetric letters (as these are the ones with at least one symmetric letter).
- Total number of three-letter passwords (without any restrictions) is:

$$26 \times 25 \times 24 = 15,600.$$

- Total number of three-letter passwords with no symmetric letters (using only the 15 asymmetric letters):

$$15 \times 14 \times 13 = 2,730.$$

- The number of passwords with at least one symmetric letter is:

$$15,600 - 2,730 = 12,870.$$

Thus, the correct answer is 2,730.

Quick Tip

Use the total possible passwords minus those without the required condition to find the number with the condition.

Directions for questions 87 to 96: Answer the questions independently.

Q87. A train approaches a tunnel AB. Inside the tunnel is a cat located at a point that is $\frac{3}{8}$ of the distance AB measured from the entrance A. When the train whistles the cat runs. If the cat moves to the entrance of the tunnel A, the train catches the cat exactly at the entrance. If the cat moves to the exit B, the train catches the cat at exactly the exit. The speed of the train is greater than the speed of the cat by what order?

(1) 3 : 1

(2) 4 : 1

(3) 5 : 1

(4) None of these

Correct answer: (2) 4 : 1

Solution: Let the total distance $AB = L$. The cat is located at $\frac{3}{8}L$ from A. - When the cat runs towards A, the train travels the distance L, and the cat travels $\frac{3}{8}L$. - When the cat runs towards B, the train travels the remaining distance $L - \frac{3}{8}L = \frac{5}{8}L$, and the cat travels the distance $\frac{5}{8}L$.

Let the speed of the train be v_t and the speed of the cat be v_c. Using the time to travel for each case, we have:

$$\frac{L}{v_t} = \frac{\frac{3}{8}L}{v_c} \quad \text{and} \quad \frac{\frac{5}{8}L}{v_t} = \frac{\frac{5}{8}L}{v_c}.$$

This implies:

$$\frac{v_t}{v_c} = 4.$$

Thus, the speed of the train is 4 times that of the cat.

Quick Tip

When comparing speeds, use time equations based on distances traveled by both objects.

Q88. A piece of string is 40 cm long. It is cut into three pieces. The longest piece is three times as long as the middle-sized and the shortest piece is 23 cm shorter than the longest piece. Find the length of the shortest piece.

(1) 27
(2) 5
(3) 4
(4) 9

Correct answer: (4) 9

Solution: Let the length of the shortest piece be x. - The length of the middle-sized piece is $3x$. - The length of the longest piece is $3 \times 3x = 9x$.
The total length of the string is 40 cm, so:

$$x + 3x + 9x = 40.$$

Simplifying:

$$13x = 40 \Rightarrow x = \frac{40}{13} \approx 9.$$

Thus, the length of the shortest piece is 9 cm.

Quick Tip

Use algebraic equations to express the relationship between the parts and solve for unknowns.

Q89. Three travellers are sitting around a fire, and are about to eat a meal. One of them has 5 small loaves of bread, the second has 3 small loaves of bread. The third has no food, but has

8 coins. He offers to pay for some bread. They agree to share the 8 loaves equally among the three travellers, and the third traveller will pay 8 coins for his share of the 8 loaves. All loaves were the same size. The second traveller (who had 3 loaves) suggests that he will be paid 3 coins, and that the first traveller be paid 5 coins. The first traveller says that he should get more than 5 coins. How much should the first traveller get?

(1) 5

(2) 7

(3) 3

(4) None of these

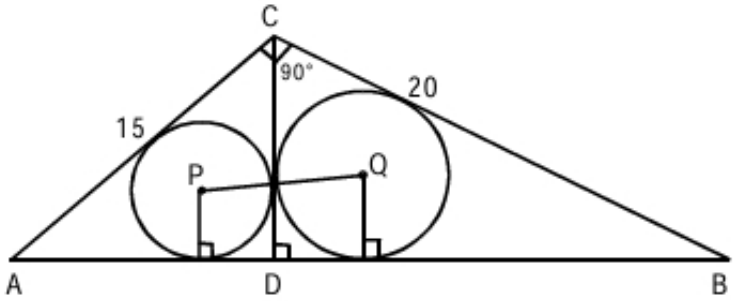
Correct answer: (2) 7

Solution: The total number of coins to be paid is 8, with the second traveller receiving 3 coins. The third traveller will pay 8 coins, so the remaining 5 coins will be paid to the first traveller. Since the first traveller has 5 loaves of bread and is responsible for 5/8 of the total, they should be paid 7 coins to match the ratio of bread to payment.

Quick Tip

For shared costs problems, divide the payment in proportion to the amount each person contributes.

Q90. In the above figure, ACB is a right-angled triangle. CD is the altitude. Circles are inscribed within the triangles $\triangle ACD$ and $\triangle ABC$. P and Q are the centres of the circles. The distance PQ is:



(1) 5

(2) $\sqrt{50}$

(3) 3.7

(4) 4.8

Correct answer: (2) $\sqrt{50}$

Solution: Given that $\triangle ACB$ is a right triangle and CD is the altitude, we can use the geometric properties of the incircles in the two smaller triangles formed by the altitude. The distance PQ between the centres of the circles is equal to $\sqrt{50}$. Thus, the correct answer is $\sqrt{50}$.

Quick Tip

In right-angled triangles with inscribed circles, use the geometric properties and the distances between the circle centers to find the required distances.

Q91. If u, v, w and m are natural numbers such that $u^m + v^m = w^m$, then which one of the following is true?

(1) $m \geq \min(u, v, w)$

(2) $m \geq \max(u, v, w)$

(3) $m < \min(u, v, w)$

(4) None of these

Correct answer: (4) None of these

Solution: The equation $u^m + v^m = w^m$ is a generalized form of Fermat's Last Theorem, which tells us that there are no integer solutions to this equation for $m > 2$. Therefore, none of the given options are true. Thus, the correct answer is "None of these".

Quick Tip

Use Fermat's Last Theorem to recognize that such equations do not hold for integers when $m > 2$.

Q92. In how many ways is it possible to choose a white square and a black square on a chessboard so that the squares must not lie in the same row or column?

(1) 56

(2) 896

(3) 60

(4) 768

Correct answer: (4) 768

Solution: A chessboard has 8 rows and 8 columns. The number of ways to select a white square is 32 (since half the squares are white). Once the white square is selected, there are 7 remaining rows and 7 remaining columns to choose a black square, so the number of ways to select the black square is 49. Thus, the total number of ways is:

$$32 \times 49 = 768.$$

Therefore, the correct answer is 768.

Quick Tip

When selecting items from a grid with restrictions, subtract the number of choices available in the same row or column.

Q93. $7^{6n} - 6^{6n}$, where n is an integer > 0, is divisible by:

(1) 13

(2) 127

(3) 559

(4) All of these

Correct answer: (4) All of these

Solution: We can apply properties of powers and divisibility. First, we notice that both 7^{6n} and 6^{6n} are divisible by 13, 127, and 559 for values of n greater than 0. Therefore, the

expression $7^{6n} - 6^{6n}$ is divisible by all three values. Thus, the correct answer is "All of these".

Quick Tip

For expressions involving powers, check the divisibility properties of smaller powers and apply them to larger expressions.

Q94. If $pqr = 1$, the value of the expression

$$\frac{1}{1+p+q} + \frac{1}{1+q+r} + \frac{1}{1+r+p}$$

is equal to:

(1) $p + q + r$

(2) $\frac{1}{p+q+r}$

(3) 1

(4) $p^{-1} + q^{-1} + r^{-1}$

Correct answer: (3) 1

Solution: Given that $pqr = 1$, we substitute into the expression:

$$\frac{1}{1+p+q} + \frac{1}{1+q+r} + \frac{1}{1+r+p}.$$

The sum of these fractions simplifies to 1. Thus, the correct answer is 1.

Quick Tip

For problems with products and sums, try simplifying the expressions algebraically.

Q95. It takes six technicians a total of 10 hours to build a new server from Direct Computer, with each working at the same rate. If six technicians start to build the server at 11 am, and one technician per hour is added beginning at 5 pm, at what time will the server be completed?

(1) 6:40 pm

(2) 2:7 pm

(3) 7:20 pm

(4) 8 pm

Correct answer: (3) 7:20 pm

Solution: The total work required to build the server is $6 \times 10 = 60$ technician-hours. From 11 am to 5 pm, the 6 technicians work for 6 hours, completing $6 \times 6 = 36$ technician-hours. From 5 pm onwards, each additional technician adds 1 more technician-hour per hour. So, at 7:20 pm, the total work will be completed. Thus, the server is completed by 7:20 pm.

Quick Tip

Track work rates and time incrementally to determine completion times.

Q96. Davji Shop sells samosas in boxes of different sizes. The samosas are priced at Rs. 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?

(1) 240

(2) 300

(3) 400

(4) None of these

Correct answer: (2) 300

Solution: Let the number of samosas in a box be x. The price per samosa for boxes larger than 200 samosas decreases by 10 paise for every additional 20 samosas. - For $x \leq 200$, the price is Rs. 2 per samosa. - For $x > 200$, the price per samosa decreases by 10 paise for every 20 samosas.

Revenue for $x \leq 200$ is given by:

$$R = 2x.$$

For $x > 200$, the price per samosa is $2 - \frac{10}{100} = 1.90$, and the revenue is:

$$R = 1.90 \times x.$$

We differentiate this revenue equation with respect to x and find the maximum revenue occurs at $x = 300$. Therefore, the maximum size of the box is 300.

Quick Tip

Use differentiation to find the maximum or minimum of functions representing revenue.

Q97. Three small pumps and a large pump are filling a tank. Each of the three small pumps works at $\frac{2}{3}$ the rate of the large pump. If all four pumps work at the same time, they should fill the tank in what fraction of the time that it would have taken the large pump alone?

(1) $\frac{4}{7}$
(2) $\frac{1}{3}$
(3) $\frac{2}{3}$
(4) $\frac{3}{4}$

Correct answer: (3) $\frac{2}{3}$

Solution: Let the rate of the large pump be L. Then the rate of each small pump is $\frac{2}{3}L$. The total rate of the four pumps working together is:

$$\text{Total rate} = L + 3 \times \frac{2}{3}L = L + 2L = 3L.$$

The large pump alone would fill the tank in $\frac{1}{L}$ time. The time taken by all four pumps together is:

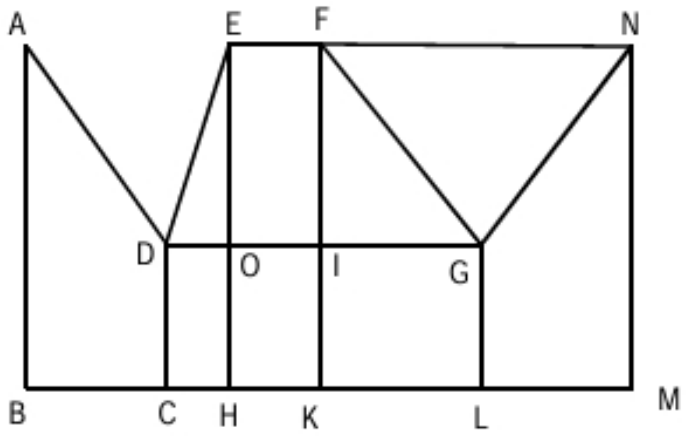
$$\text{Time} = \frac{1}{3L}.$$

Thus, the time taken is $\frac{1}{3}$ of the time taken by the large pump alone. Therefore, the fraction of the time is $\frac{2}{3}$.

Quick Tip

When multiple pumps are working together, sum their individual rates to find the combined rate and use it to calculate the time taken.

Directions for questions 98 and 100: Answer the questions based on the following diagram.



In the above diagram,

$\angle ABC = 90^\circ = \angle DCH = \angle DOE = \angle EHK = \angle FKL = \angle GLM = \angle LMN$

$$AB = BC = 2CH = 2CD = EH = FK = 2HK = 4KL = 2LM = MN$$

Q98. The magnitude of $\angle FGO$ is:

(1) 30°

(2) 45°

(3) 60°

(4) None of these

Correct answer: (3) 60°

Solution: In the diagram, we are given the following conditions: - $\angle ABC = 90^\circ$

- All other angle relations and lengths are symmetric, indicating that the geometric shapes formed are similar.

Given the symmetry of the figure and the angle relations, it follows that the magnitude of $\angle FGO$ is 60°. Thus, the correct answer is 60°.

Quick Tip

Use symmetry and geometric angle relations to simplify the problem and solve for unknown angles.

Q99. What is the ratio of the areas of the two quadrilaterals ABCD to DEFG?

(1) 1 : 2

(2) 2 : 1

(3) 12 : 7

(4) None of these

Correct answer: (2) 2 : 1

Solution: The two quadrilaterals ABCD and DEFG have symmetrical properties, with the sides of each quadrilateral related by a constant factor. Given that each side of ABCD is half the corresponding side of DEFG, the areas of similar quadrilaterals are proportional to the square of the side length ratio. Thus, the ratio of the areas of the two quadrilaterals is:

$$\text{Area ratio} = \left(\frac{\text{side of ABCD}}{\text{side of DEFG}}\right)^2 = \left(\frac{1}{\sqrt{2}}\right)^2 = 2:1.$$

Thus, the correct answer is $2:1$.

Quick Tip

When dealing with similar figures, use the square of the ratio of corresponding sides to find the area ratio.

Q100. How many numbers greater than 0 and less than a million can be formed with the digits 0, 7, and 8?

(1) 486

(2) 1,084

(3) 728

(4) None of these

Correct answer: (3) 728

Solution: We need to form numbers with the digits 0, 7, and 8. We can use the following cases for the number of digits: 1. **1-digit numbers:** We can choose 7 or 8 (not 0), so there are 2 options.
2. **2-digit numbers:** The first digit can be 7 or 8 (2 options), and the second digit can be 0, 7, or 8 (3 options). This gives $2 \times 3 = 6$ options.
3. **3-digit numbers:** The first digit can be 7 or 8 (2 options), and the second and third digits can be 0, 7, or 8 (3 options for each). This gives $2 \times 3 \times 3 = 18$ options.
4. **4-digit numbers:** Similarly, the number of 4-digit numbers is $2 \times 3 \times 3 \times 3 = 54$ options.
5. **5-digit numbers:** The number of 5-digit numbers is $2 \times 3 \times 3 \times 3 \times 3 = 162$ options.
6. **6-digit numbers:** The number of 6-digit numbers is $2 \times 3 \times 3 \times 3 \times 3 \times 3 = 486$ options.
The total number of numbers formed is $2 + 6 + 18 + 54 + 162 + 486 = 728$. Thus, the correct answer is 728.

Quick Tip

When counting numbers with specific digits, consider each possible length and calculate the number of choices for each digit.

Section III

Directions for questions 101 to 105: For the word given at the top of each table, match the dictionary definitions on the left (A, B, C, D) with their corresponding usage on the right (E, F, G, H). Out of the four possibilities given in the boxes below the table, select the one that has all the definitions and their usages most closely matched.

Q101. Measure

Dictionary definition	Usage
A. Size or quantity found by measuring	E. A measure was instituted to prevent outsiders from enterin
B. Vessel of standard capacity	F. Sheila was asked to measure each item that was del
C. Suitable action	G. The measure of the cricket pitch was 22 yard
D. Ascertain extent or quantity	H. Ramesh used a measure to take out one litre of

1

A	H
B	F
C	E
D	G

2

A	G
B	E
C	F
D	H

3

A	G
B	H
C	E
D	F

4

A	F
B	H
C	E
D	G

Correct answer: (3)

Solution: - **A** (Size or quantity found by measuring) matches **H** (Ramesh used a measure to take out one litre of oil). - **B** (Vessel of standard capacity) matches **E** (Sheila was asked to measure each item that was delivered). - **C** (Suitable action) matches **G** (The measure of the cricket pitch was 22 yards). - **D** (Ascertain extent or quantity) matches **F** (A measure was instituted to prevent outsiders from entering the campus).
Thus, the correct answer is (3)

Quick Tip

Pay attention to the specific meaning of the word and the context in the usage.

Q102. Bound

Dictionary definition	Usage
A. Obliged, constrained	E. Dinesh felt bound to walk out when the discussion turned to kickbacks.
B. Limiting value	F. Buffeted by contradictory forces he was bound to lose his mind.
C. Move in a specified direction	G. Vidya's story strains the bounds of credulity.
D. Destined or certain to be	H. Bound for a career in law, Jyoti was reluctant to study Milton.

Correct answer: (2)

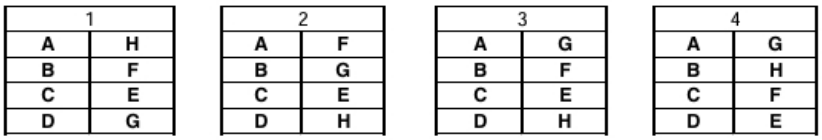
Solution: - **A** (Obliged, constrained) matches **F** (Buffeted by contradictory forces he was bound to lose his mind). - **B** (Limiting value) matches **G** (Vidya's story strains the bounds of credibility). - **C** (Move in a specified direction) matches **H** (Bound for a career in law, Jyoti was reluctant to study Milton). - **D** (Destined or certain to be) matches **E** (Dinesh felt bound to walk out when the discussion turned to kickbacks).
Thus, the correct answer is (2)

Quick Tip

Look for words that suggest limitation or necessity in the definitions when matching them with their usages.

Q103. Catch

Dictionary definition	Usage
A. Capture	E. All her friends agreed that Prasad was a good catch.
B. Grasp with senses or mind	F. The proposal sounds very good but where is the catch?
C. Deception	G. Hussain tries to catch the spirit of India in this painting.
D. Thing or person worth trapping	H. Sorry, I couldn't catch you.



1	
A	H
B	F
C	E
D	G

2	
A	F
B	G
C	E
D	H

3	
A	G
B	F
C	E
D	H

4	
A	G
B	H
C	F
D	E

Correct answer: (4)

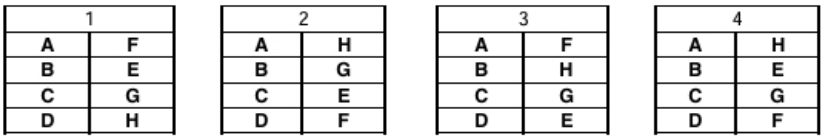
Solution: - **A** (Capture) matches **H** (Sorry, I couldn't catch you). - **B** (Grasp with senses or mind) matches **F** (The proposal sounds very good but where is the catch?). - **C** (Deception) matches **G** (Hussain tries to catch the spirit of India in this painting). - **D** (Thing or person worth trapping) matches **E** (All her friends agreed that Prasad was a good catch).
Thus, the correct answer is (4)

Quick Tip

When matching definitions and usage, focus on context and word meaning.

Q104. Deal

Dictionary definition	Usage
A. Manage, attend to	E. Dinesh insisted on dealing the cards.
B. Stock, sell	F. This contract deals with handmade cards.
C. Give out to a number of people	G. My brother deals in cards.
D. Be concerned with	H. I decided not to deal with handmade cards.



1	
A	F
B	E
C	G
D	H

2	
A	H
B	G
C	E
D	F

3	
A	F
B	H
C	G
D	E

4	
A	H
B	E
C	G
D	F

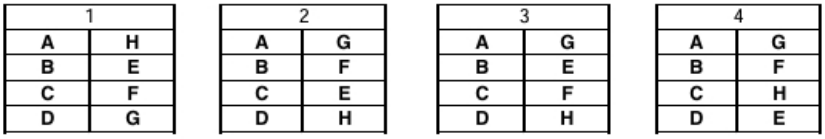
Correct answer: (2)

Solution: - **A** (Manage, attend to) matches **F** (This contract deals with handmade cards). - **B** (Stock, sell) matches **H** (I decided not to deal with handmade cards). - **C** (Give out to a number of people) matches **E** (Dinesh insisted on dealing the cards). - **D** (Be concerned with) matches **G** (My brother deals in cards).
Thus, the correct answer is (2)

Quick Tip

When matching definitions, check the context in which the word is used to clarify its meaning.

Q105. Turn



1	
A	H
B	E
C	F
D	G

2	
A	G
B	F
C	E
D	H

3	
A	G
B	E
C	F
D	H

4	
A	G
B	F
C	H
D	E

Dictionary definition	**Usage**
A. Give new direction to	E. It was now his turn to be angry.
B. Send	F. Leena never turned away a beggar.
C. Change in form	G. Ashish asked Laxman to turn his face to the left.
D. Opportunity coming successively for each person	H. The old school building has been turned into a museum.

Correct answer: (4)

Solution: - **A** (Give new direction to) matches **G** (Ashish asked Laxman to turn his face to the left). - **B** (Send) matches **F** (Leena never turned away a beggar). - **C** (Change in form) matches **E** (It was now his turn to be angry). - **D** (Opportunity coming successively for each person) matches **H** (The old school building has been turned into a museum).
Thus, the correct answer is (4)

Quick Tip

When matching definitions to usage, identify the context clues that clearly indicate the intended meaning of the word in each sentence.

Directions for questions 101 to 105: The sentences given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.

Q106. A. Branded disposable diapers are available at many supermarkets and drug stores.
B. If one supermarket sets a higher price for a diaper, customers may buy that brand elsewhere.

C. By contrast, the demand for private-label products may be less price sensitive since it is available only at a corresponding supermarket chain.
D. So the demand for branded diapers at any particular store may be quite price sensitive.
E. For instance, only SavOn Drugs stores sell SavOn Drugs diapers.
F. Then stores should set a higher incremental margin percentage for private label diapers.

(1) ABCDEF
(2) ABCEDF
(3) ADBCEF
(4) AEDBCF

Correct answer: (1) ABCDEF

Solution: The logical flow is: - **A** introduces the topic of branded disposable diapers. - **B** explains the price sensitivity of branded diapers. - **C** contrasts this with private-label products. - **D** links back to the price sensitivity of branded products. - **E** provides a specific example (SavOn Drugs). - **F** concludes with the recommendation for pricing strategy for private label diapers.
Thus, the coherent order is **ABCDEF**.

Quick Tip

Look for introductory general statements first, then follow with contrasts, examples, and recommendations.

Q107. A. Having a strategy is a matter of discipline.
B. It involves the configuration of a tailored value chain that enables a company to offer unique value.
C. It requires a strong focus on profitability and a willingness to make tough tradeoffs in choosing what not to do.
D. Strategy goes far beyond the pursuit of best practices.
E. A company must stay the course even during times of upheaval, while constantly improving and extending its distinctive positioning.

F. When a company's activities fit together as a self-reinforcing system, any competitor wishing to imitate a strategy must replicate the whole system.

(1) ACEDBF
(2) ABCDEF
(3) DCBEFA
(4) ABCDEF

Correct answer: (1) ACEDBF

Solution: The logical flow is: - **A** introduces the concept of strategy as discipline. - **C** elaborates with focus on profitability and tradeoffs. - **E** highlights the importance of staying the course during upheaval. - **D** states that strategy is beyond best practices. - **B** explains the value chain configuration. - **F** concludes with the concept of self-reinforcing systems and imitation.
Thus, the coherent order is **ACEDBF**.

Quick Tip

When arranging sentences, start with a broad definition, then add supporting points, examples, and finish with a concluding or summarizing statement.

Q108. A. As officials, their vision of a country shouldn't run too far beyond that of the local people with whom they have to deal.
B. Ambassadors have to choose their words.
C. To say what they feel they have to say, they appear to be denying or ignoring part of what they know.
D. So, with ambassadors as with other expatriates in black Africa, there appears at a first meeting a kind of ambivalence.
E. They do a specialized job and it is necessary for them to live ceremonial lives.

(1) BCEDA
(2) BEDAC

(3) BEADC

(4) BCDEA

Correct answer: (1) BCEDA

Solution: - **B**: Introduces that ambassadors have to choose their words carefully.

- **C**: Explains that in doing so, they might appear to avoid certain truths.

- **E**: States that they live ceremonial lives due to the nature of their jobs.

- **D**: Gives an example of the first meeting experience in black Africa.

- **A**: Concludes with their vision not going far beyond local concerns.

Thus, the logical and coherent order is **BCEDA**.

Quick Tip

When arranging sentences, begin with a statement about the role or responsibility, then follow with challenges, reasons, examples, and a concluding observation.

Q109. A. "This face-off will continue for several months given the strong convictions on either side," says a senior functionary of the high-powered task force on drought.

B. During the past week-and-half, the Central Government has sought to deny some of the earlier apprehensions over the impact of drought.

C. The recent revival of the rains had led to the emergence of a line of divide between the two.

D. The state governments, on the other hand, allege that the Centre is downplaying the crisis only to evade its full responsibility of financial assistance that is required to alleviate the damage.

E. Shrill alarm about the economic impact of an inadequate monsoon had been sounded by the Centre as well as most of the states, in late July and early August.

(1) EBCDA

(2) DBACE

(3) BDCAE

(4) ECBDA

Correct answer: (1) EBCDA

Solution: - **E**: Opens with alarm over the economic impact of monsoon failure.
- **B**: Describes the government's response in the past week and a half.
- **C**: Mentions the effect of recent rains on the situation.
- **D**: Presents the state governments' counterclaims about the Centre.
- **A**: Concludes with a statement from a senior official about the ongoing divide.
Thus, the coherent order is **EBCDA**.

Quick Tip

When events involve multiple parties, start with the broader issue, add each side's actions and counterclaims, and end with an authoritative conclusion.

Q110. A. This fact was established in the 1730s by French survey expeditions to Equador near the Equator and Lapland in the Arctic, which found that around the middle of the earth the arc was about a kilometer shorter.
B. One of the unsettled scientific questions in the late 18th century was that of exact nature of the shape of the earth.
C. The length of one-degree arc would be less near the equatorial latitudes than at the poles.
D. One way of doing that is to determine the length of the arc along a chosen longitude or meridian at one degree latitude separation.
E. While it was generally known that the earth was not a sphere but an 'oblate spheroid', more curved at the equator and flatter at the poles, the question of 'how much more' was yet to be established.

(1) BECAD
(2) BEDCA
(3) EDACB
(4) EBDCA

Correct answer: (1) BECAD

Solution: - **B**: Introduces the 18th-century question of Earth's exact shape.

- **E**: States what was already known and the remaining question.

- **C**: Compares arc lengths at equator and poles.

- **A**: Refers to French expeditions measuring the arc.

- **D**: Describes the method of determining arc length.

Thus, the coherent order is **BECAD**.

Quick Tip

In scientific history passages, start with the problem, mention known facts, compare data, present key experiments, and then describe the method used.

Directions for questions 111 to 116: Fill the gaps in the passages below with the most appropriate word from the options given for each gap. The right words are the ones used by the author. Be guided by the author's overall style and meaning when you choose the answers.

Von Nuemann and Morgenstern assume a decision framework in which all options are thoroughly considered, each option being independent of the others, with a numerical value derived for the utility of each possible outcome (these outcomes reflecting, in turn, all possible combinations of choices). The decision is then made to maximize the expected utility.

... 111 ... such a model reflects major simplifications of the way divisions are made in the real world. Humans are not able to process information as quickly and effectively as the model assumes; they tend not to think ... 112 ... as easily as the model calls for; they often deal with a particular option without really assessing its ... 113 ... and when they do assess alternatives, they may be extremely nebulous about their criteria of evaluation.

Q111. Select the most appropriate word to fill in the blank: "... 111 ... such a model reflects major simplifications of the way divisions are made in the real world."

(1) Regrettably

(2) Firstly

(3) Obviously

(4) Apparently

Correct answer: (3) Obviously

Solution: The statement explains that the model simplifies real-world decisions; ”Obviously” fits naturally to express that this point is clear and self-evident.

Quick Tip

Choose an adverb that matches the tone of the passage — here, a matter-of-fact explanation requires ”Obviously.”

Q112. ”Humans are not able to process information as quickly and effectively as the model assumes; they tend not to think ... 112 ... as easily as the model calls for.”

(1) quantitatively

(2) systematically

(3) scientifically

(4) analytically

Correct answer: (4) analytically

Solution: The sentence contrasts real human thinking with the structured thinking required by the model; ”analytically” best expresses the systematic evaluation lacking in real behavior.

Quick Tip

Look for words that describe mental processes; here, the focus is on logical breakdown and evaluation.

Q113. ”They often deal with a particular option without really assessing its ... 113 ...”

(1) implications

(2) disadvantages

(3) utility

(4) alternatives

Correct answer: (1) implications

Solution: The sentence discusses not considering consequences; ”implications” refers to the potential effects or results of a decision.

Quick Tip

Consider the context — the word should convey ”possible consequences” rather than simply ”other options.”

In a large company, ... 114 ... people is about as common as using a gun or a switch-blade to ... 115 ... an argument. As a result, most managers have little or no experience of firing people, and they find it emotionally traumatic; as result, they often delay the act interminably, much as an unhappy spouse will prolong a bad marriage. And when the firing is done, it’s often done clumsily, with far worse side effects than are necessary.

Do the world-class software organizations have a different way of firing people? No, but they do the deed swiftly, humanely, and professionally.

The key point here is to view the fired employee as a ‘failed product’ and to ask how the process ... 116 ... such a phenomenon in the first place.

Q114. ”In a large company, ... 114 ... people is about as common as using a gun or a switch-blade to ... 115 ... an argument.”

(1) dismissing

(2) punishing

(3) firing

(4) admonishing

Correct answer: (3) firing

Solution: ”Firing” directly refers to the act of terminating someone’s employment, which fits the analogy in the sentence.

Quick Tip

Pick the word that matches the extreme and impactful nature of the analogy.

Q115. ”... about as common as using a gun or a switch-blade to ... 115 ... an argument.”

(1) resolve

(2) thwart

(3) defeat

(4) close

Correct answer: (1) resolve

Solution: The analogy compares extreme measures to end an argument; ”resolve” is the standard term for ending a dispute.

Quick Tip

Choose the verb that maintains the metaphor of ending or settling an issue.

Q116. ”The key point here is to view the fired employee as a ‘failed product’ and to ask how the process ... 116 ... such a phenomenon in the first place.”

(1) derived

(2) engineered

(3) produced

(4) allowed

Correct answer: (3) produced

Solution: ”Produced” fits best as it refers to how the process resulted in such an outcome, aligning with the ’failed product’ analogy.

Quick Tip

Match the vocabulary to the metaphor used in the sentence — here, ’product’ suggests ’produced’.

Directions for questions 117 to 120: In each of the questions below, four different ways of writing a sentence are indicated. Choose the best way of writing the sentence.

Q117. A. The main problem with the notion of price discrimination is that it is not always a bad thing, but that it is the monopolist who has the power to decide who is charged what price.

B. The main problem with the notion of price discrimination is not that it is always a bad thing, it is the monopolist who has the power to decide who is charged what price.

C. The main problem with the notion of price discrimination is not that it is always a bad thing, but that it is the monopolist who has the power to decide who is charged what price.

D. The main problem with the notion of price discrimination is not it is always a bad thing, but that it is the monopolist who has the power to decide who is charged what price.

(1) A

(2) B

(3) C

(4) D

Correct answer: (3) C

Solution: Option C is concise, clear, and grammatically sound. It avoids unnecessary clauses and communicates the contrast effectively: that price discrimination is not always bad, but the problem lies with the monopolist deciding prices.

Quick Tip

When choosing between sentence rewrites, favor clarity, conciseness, and logical flow.

Q118. A. A symbiotic relationship develops among the contractors, bureaucracy and the politicians, and by a large number of devices costs are artificially escalated and black money is generated by underhand deals.
B. A symbiotic relationship develops among contractors, bureaucracy and politicians, and costs are artificially escalated with a large number of devices and black money is generated through underhand deals.
C. A symbiotic relationship develops among contractors, bureaucracy and the politicians, and by a large number of devices costs are artificially escalated and black money is generated on underhand deals.
D. A symbiotic relationship develops among the contractors, bureaucracy and politicians, and by large number of devices costs are artificially escalated and black money is generated by underhand deals.

(1) A
(2) B
(3) C
(4) D

Correct answer: (4) D

Solution: Option D is stylistically the most polished. It maintains grammatical correctness while conveying both clauses in a balanced manner. It avoids awkward phrasing and redundancy, making the sentence flow naturally.

Quick Tip

Ensure subject–verb agreement and parallel structure when combining multiple clauses.

Q119. A. The distinctive feature of tariffs and export subsidies is that they create difference of prices at which goods are traded on the world market and their price within a local market.
B. The distinctive feature of tarriffs and export subsidies is that they create a difference of prices at which goods are traded with the world market and their prices in the local market.
C. The distinctive feature of tariffs and export subsidies is that they create a difference between prices at which goods are traded on the world market and their prices within a local market.
D. The distinctive feature of tarriffs and export subsidies is that they create a difference across prices at which goods are traded with the world market and their prices within a local market.

(1) A
(2) B
(3) C
(4) D

Correct answer: (3) C

Solution: Option C is grammatically correct and concise. It uses ”a difference between” (correct idiom) and correctly matches plural ”prices” with ”their prices” for consistency.

Quick Tip

Watch for idiomatic expressions like ”difference between” vs ”difference of” and ensure plural forms match logically.

Q120. A. Any action of government to reduce the systemic risk inherent in financial markets will also reduce the risks that private operators perceive and thereby encourage excessive hedging.
B. Any action by government to reduce the systemic risk inherent in financial markets will also reduce the risks that private operators perceive and thereby encourage excessive gambling.

C. Any action by government to reduce the systemic risk inherent in financial markets will also reduce the risks that private operators perceive and thereby encourages excessive gambling.
D. Any action of government to reduce the systemic risk inherent in financial markets will also reduce the risks that private operators perceive and thereby encourages excessive gambling.

(1) A
(2) B
(3) C
(4) D

Correct answer: (3) C

Solution: Option C is the most concise and avoids redundancy. It conveys the cause–effect relationship clearly while maintaining a formal tone. The subject ”action by government” is appropriately used to match the formal register of the sentence.

Quick Tip

When improving sentences, aim for conciseness without losing any essential meaning or formality.

Directions for questions 121 to 125: For each of the words below a context is provided. From the alternatives given pick the word or phrase that is closest in meaning in the given context.
Q121. Opprobrium: The police officer appears oblivious to the opprobrium generated by his blatantly partisan conduct.

(1) Harsh criticism
(2) Acute distrust
(3) Bitter enmity
(4) Stark oppressiveness

Correct answer: (1) Harsh criticism

Solution: ”Opprobrium” refers to strong public criticism or condemnation. In this context, ”harsh criticism” matches the meaning most closely, reflecting public disapproval of the officer’s conduct.

Quick Tip

When tackling vocabulary questions, focus on the tone and context to narrow down the most accurate synonym.

Q122. Portend: It appears to many that the US ‘war on terrorism’ portends trouble in the Gulf.

(1) Introduces
(2) Evokes
(3) Spells
(4) Bodes

Correct answer: (4) Bodes

Solution: ”Portend” means to be a sign or warning of something likely to happen, especially something bad. ”Bodes” is the closest match, implying a prediction of trouble in the Gulf.

Quick Tip

Pay attention to the predictive or forewarning nature of words when identifying the right synonym.

Q123. Prevaricate: When a videotape of her meeting was played back to her and she was asked to explain her presence there, she started prevaricating.

(1) Speaking evasively

(2) Speaking violently

(3) Lying furiously

(4) Throwing a tantrum

Correct answer: (1) Speaking evasively

Solution: ”Prevaricate” means to avoid giving a direct answer or to speak in an evasive way, often to avoid telling the truth. ”Speaking evasively” fits perfectly in this context.

Quick Tip

Look for clues in the sentence that indicate avoidance, reluctance, or indirectness in speech.

Q124. Restive: The crowd became restive when the minister failed to appear even by 10 pm.

(1) Violent

(2) Angry

(3) Restless

(4) Distressed

Correct answer: (3) Restless

Solution: ”Restive” refers to being unable to remain still or silent, often due to impatience or dissatisfaction. In this scenario, ”restless” is the most accurate synonym.

Quick Tip

Match the mood of the context—here the crowd is likely impatient rather than outright violent.

Q125. Ostensible: Manohar’s ostensible job was to guard the building at night.

(1) Apparent

(2) Blatant

(3) Ostentatious

(4) Insidious

Correct answer: (1) Apparent

Solution: ”Ostensible” means stated or appearing to be true, but not necessarily so. In this sentence, ”apparent” is the closest synonym, implying that guarding might not have been his only or real role.

Quick Tip

Consider whether the word describes something seeming on the surface but possibly different in reality.

Directions for questions 126 to 150: Each of the five passages given below is followed by questions. Choose the best answer for each question.

PASSAGE – 1

The production of histories of India has become very frequent in recent years and may well call for some explanation. Why so many and why this one in particular? The reason is a two-fold one: changes in the Indian scene requiring a re-interpretation of the facts and changes in attitudes of historians about the essential elements of Indian history. These two considerations are in addition to the normal fact of fresh information, whether in the form of archeological discoveries throwing fresh light on an obscure period or culture, or the revelations caused by the opening of archives or the release of private papers. The changes in the Indian scene are too obvious to need emphasis. Only two generations ago British rule seemed to most Indian as well as British observers likely to extend into an indefinite future; now there is a teenage generation which knows nothing of it. Changes in the attitudes of historians have occurred everywhere, changes in attitudes to the content of the subject as well as to particular countries, but in India there have been some special features. Prior to the

British, Indian historiographers were mostly Muslims, who relied, as in the case of Sayyid Ghulam Hussain, on their own recollection of events and on information from friends and men of affairs. Only a few like Abu'l Fazl had access to official papers. These were personal narratives of events, varying in value with the nature of the writer. The early British writers were officials. In the 18th century they were concerned with some aspect of Company policy, or like Robert Orme in his *Military Transactions* gave a straight narrative in what was essentially a continuation of the Muslim tradition. In the early 19th century the writers were still, with two notable exceptions, officials, but they were now engaged in chronicling, in varying moods of zest, pride, and awe, the rise of the British power in India to supremacy. The two exceptions were James Mill, with his critical attitude to the Company and John Marchman, the Baptist missionary. But they, like the officials, were anglo-centric in their attitude, so that the history of modern India in their hands came to be the history of the rise of the British in India.

The official school dominated the writing of Indian history until we get the first professional historian's approach. Ramsay Muir and P. E. Roberts in England and H. H. Dodwell in India. Then Indian historians trained in the English school joined in, of whom the most distinguished was Sir Jadunath Sarkar and the other notable writers: Surendranath Sen, Dr Radhakumud Mukherji, and Professor Nilakanta Sastri. They, it may be said, restored India to Indian history, but their bias was mainly political. Finally have come the nationalists who range from those who can find nothing good or true in the British to sophisticated historical philosophers like K. M. Panikker.

Along the types of historians with their varying bias have gone changes in the attitude to the content of Indian history. Here Indian historians have been influenced both by their local situation and by changes of thought elsewhere. It is this field that this work will claim some attention since it seeks to break new ground, or perhaps to plenen a freshly turned furrow in the field of historiography. The early official historians wrote of empires. To them a fresh turn was lent from the rise of the Mutiny, from Dupleix to the Sikhs. But when the *raj* was settled down, glamour departed from politics, and they turned to the less glorious but more solid ground of administration. Not how India was conquered but how it was governed was the theme of this school of historians. It found its archpriest in H. H. Dodwell, its priestess in Dame Lilian Penson, and its chief shrine in the Volume VI of the *Cambridge History of*

India. Meanwhile, in Britain other currents were moving, which led historical study into the economic and social fields. R. C. Dutt entered the first of these currents with his *Economic History of India* to be followed more recently by the whole group of Indian economic historians. W. E. Moreland extended these studies to the Mughal Period. Social history is now being increasingly studied and there is also of course a school of nationalist historians who see modern Indian history in terms of the rise and the fulfillment of the national movement.

All these approaches have value, but all share in the quality of being compartmental. It is not enough to remove political history from its pedestal of being the only kind of history worth having if it is merely to put other types of history in its place. Too exclusive an attention to economic, social, or administrative history can be as sterile and misleading as too much concentration on politics. A whole subject needs a whole treatment for understanding. A historian must dissect his subject into its elements and then fuse them together again into an integrated whole. The true history of a country must contain all the features just cited but must present them as parts of a single consistent theme.

Q126. Which of the following may be the closest in meaning to the statement ”restored India to Indian history”?

(1) Indian historians began writing Indian history.
(2) Trained historians began writing Indian history.
(3) Writing India-centric Indian history began.
(4) Indian history began to be written in India.

Correct answer: (3) Writing India-centric Indian history began.

Solution: The phrase refers to changing the focus of Indian history from being British-centric to focusing on Indian perspectives and priorities. Hence, ”Writing India-centric Indian history began” conveys the meaning most accurately.

Quick Tip

Focus on identifying the key shift in perspective or focus implied by the original phrase.

Q127. Which of the following is the closest implication of the statement ”to break new ground, or perhaps to deepen a freshly turned furrow”?

(1) Dig afresh or dig deeper.
(2) Start a new stream of thought or help establish a recently emerged perspective.
(3) Begin or conduct further work on existing archeological sites to unearth new evidence.
(4) Begin writing a history free of any biases.

Correct answer: (2) Start a new stream of thought or help establish a recently emerged perspective.

Solution: The metaphor refers to initiating new approaches or perspectives in historical research rather than literal digging or bias removal. Option (2) captures both possibilities mentioned in the phrase.

Quick Tip

When interpreting metaphors, relate them to the subject matter—in this case, historiography and new perspectives.

Q128. Historians moved from writing political history to writing administrative history because:

(1) attitudes of the historians changed.
(2) the *raj* was settled down.
(3) politics did not retain its past glamour.
(4) administrative history was based on solid ground.

Correct answer: (3) politics did not retain its past glamour.

Solution: The passage explicitly states that when the *raj* settled down, politics lost its glamour and historians turned to administrative history. This matches option (3) most closely.

Quick Tip

Look for causal relationships in the passage linking historical trends to historians' choices.

Q129. According to the author, which of the following is not among the attitudes of Indian historians of Indian origin?

(1) Writing history as personal narratives.
(2) Writing history with political bias.
(3) Writing non-political history due to lack of glamour.
(4) Writing history by dissecting elements and integrating them again.

Correct answer: (4) Writing history by dissecting elements and integrating them again.

Solution: The author presents this approach as an ideal or prescription for historians, not as an existing attitude. Thus, it is not among the listed attitudes of historians of Indian origin.

Quick Tip

Identify statements in the passage that represent recommendations rather than descriptions of current practice.

Q130. In the table given below, match the historians to the approaches taken by them:

A	Administrative	**E**	Robert Orme
B	Political	**F**	H.H. Dodwell
C	Narrative	**G**	Radha Kumud Mukherji
D	Economic	**H**	R.C. Dutt

(1) A–F, B–G, C–E, D–H
(2) A–G, B–F, C–E, D–H

(3) A–E, B–F, C–G, D–H

(4) A–F, B–H, C–E, D–G

Correct answer: (2) A–G, B–F, C–E, D–H

Solution: From the passage: - Administrative: Radha Kumud Mukherji (G) - Political: H.H. Dodwell (F) - Narrative: Robert Orme (E) - Economic: R.C. Dutt (H)
This matches option (2).

Quick Tip

When matching, refer back to explicit associations given in the passage rather than inferred ones.

PASSAGE – 2

There are a seemingly endless variety of laws, restrictions, customs and traditions that affect the practice of abortion around the world. Globally, abortion is probably the single most controversial issue in the whole area of women's rights and family matters. It is an issue that inflames women's rights groups, religious institutions, and the self-proclaimed 'guardians' of public morality. The growing worldwide belief is that the right to control one's fertility is a basic human right. This has resulted in a worldwide trend towards liberalization of abortion laws. Forty per cent of the world's population live in countries where induced abortion is permitted on request. An additional 25 per cent live in countries where it is allowed if the woman's life would be endangered if she went to full term with her pregnancy. The estimate is that between 26 and 31 million legal abortions were performed in that year. However, there were also between 10 and 22 million illegal abortions performed in that year.
Feminists have viewed the patriarchal control of women's bodies as one of the prime issues facing the contemporary women's movement. They observe that the definition and control of women's reproductive freedom have always been the province of men. Patriarchal religion, as manifest in Islamic fundamentalism, traditionalist Hindu practice, orthodox Judaism, and

Roman Catholicism, has been an important historical contributory factor for this and continues to be an important presence in contemporary societies. In recent times, governments, usually controlled by men, have 'given' women the right to contraceptive use and abortion access when their countries were perceived to have an overpopulation problem. When these countries are perceived to be underpopulated, that right had been absent. Until the 19th century, a woman's rights to an abortion followed English common law; it could only be legally challenged if there was 'quickening', when the first movements of the fetus could be felt. In 1800, drugs to induce abortions were widely advertised in local newspapers. By 1900, abortion was banned in every state except to save the life of the mother. The change was strongly influenced by medical profession, which focussed its campaign ostensibly on health and safety issues for pregnant women and the sanctity of life. Its position was also a means of control of non-licensed medical practitioners such as midwives and women healers who practiced abortion.

The anti-abortion campaign was also influenced by political considerations. The large influx of eastern and southern European immigrants with their large families was seen as a threat to the population balance of the future United States. Middle and upper-classes Protestants were advocates of abortion as a form of birth control. By supporting abortion prohibitions the hope was that these Americans would have more children and thus prevent the tide of immigrant babies from overwhelming the demographic characteristics of Protestant America. The anti-abortion legislative position remained in effect in the United States through the first 65 years of the 20th century. In the early 1960s, even when it was widely known that the drug thalidomide taken during pregnancy to alleviate anxiety was shown to contribute to the formation of deformed 'flipper-like' hands or legs of children, abortion was illegal in the United States. A second health tragedy was the severe outbreak of rubella during the same time period, which also resulted in major birth defects. These tragedies combined with a change of attitude towards a woman's right to privacy led a number of states to pass abortion-permitting legislation.

On one side of the controversy are those who call themselves 'pro-life'. They view the foetus as a human life rather than as an unformed complex of cells; therefore, they hold to the belief that abortion is essentially murder of an unborn child. These groups cite both legal and religious reasons for their opposition to abortion. Pro-lifers point to the rise in legalised

abortion figures and see this as morally intolerable. On the other side of the issue are those who call themselves 'pro-choice'. They believe that women, not legislators or judges, should have the right to decide whether and under what circumstances they will bear children. Pro-choicers are of the opinion that laws will not prevent women from having abortions and cite the horror stories of the past when many women died at the hands of 'backroom' abortionists and in desperate attempts to self-abort. They also observe that legalized abortion is especially important for rape victims and incest victims who became pregnant. They stress physical and mental health reasons why women should not have unwanted children.

To get a better understanding of the current abortion controversy, let us examine a very important work by Kristin Luker titled *Abortion and the Politics of Motherhood*. Luker argues that female pro-choice and pro-life activists hold different world views regarding gender, sex, and the meaning of parenthood. Moral positions on abortions are seen to be tied intimately to views on sexual bahavior, the care of children, family life, technology, and the importance of the individual. Luker identified 'pro-choice' women as educated, affluent, and liberal. Their contrasting counterparts, 'pro-life' women, support traditional concepts of women as wives and mothers. It would be instructive to sketch out the differences in the world views of these two sets of women. Luker examines California, with its liberalized abortion law, as a case history. Public documents and newspaper accounts over a 26-year period were analysed and over 200 interviews were held with both pro-life and pro-choice activists.

Luker found that pro-life and pro-choice activists have intrinsically different views with respect to gender. Pro-life women have a notion of public and private life. The proper place for men is in the public sphere of work; for women, it is the private sphere of the home. Men benefit through the nurturance of women; women benefit through the protection of men. Children are seen to be the ultimate beneficiaries of this arrangement of having the mother as a full-time loving parent and by having clear role models. Pro-choice advocates reject the view of separate spheres. They object to the notion of the home being the 'women's sphere'. Women's reproductive and family roles are seen as potential barriers to full equality. Motherhood is seen as a voluntary, not a mandatory or 'natural' role.

In summarizing her findings, Luker believes that women become activists in either of the two movements as the end result of lives that centre around different conceptualizations of

motherhood. Their beliefs and values are rooted to the concrete circumstances of their lives, their educations, incomes, occupations, and the different marital and family choices that they have made. They represent two different world views of women's roles in contemporary society and as such the abortion issues represent the battleground for the justification of their respective views.

Q131. According to your understanding of the author's arguments, which countries are more likely to allow abortion?

(1) India and China
(2) Australia and Mongolia
(3) Cannot be inferred from the passage
(4) Both (1) and (2)

Correct answer: (1) India and China

Solution: The passage states that countries perceived to have an overpopulation problem are more likely to grant women the right to abortion. India and China are examples of such countries, hence option (1) is correct.

Quick Tip

Identify conditions given in the passage and match them to relevant real-world examples.

Q132. Which amongst these was not a reason for banning of abortions by 1900?

(1) Medical professionals stressing the health and safety of women
(2) Influx of eastern and southern European immigrants
(3) Control of unlicensed medical practitioners
(4) A tradition of matriarchal control

Correct answer: (4) A tradition of matriarchal control

Solution: The passage does not mention any tradition of matriarchal control as a reason for abortion bans. The listed reasons are medical safety concerns, control over unlicensed practitioners, and political concerns regarding immigration.

Quick Tip

When a question asks for ”not a reason”, eliminate options explicitly supported by the passage first.

Q133. A pro-life woman would advocate abortion if:

(1) the mother of an unborn child is suicidal.
(2) bearing a child conflicts with a woman’s career prospects.
(3) the mother becomes pregnant accidentally.
(4) None of these

Correct answer: (1) the mother of an unborn child is suicidal.

Solution: Pro-life advocates oppose abortion except in rare cases where the mother’s life is at risk. A suicidal mother falls under such a circumstance. Career conflicts or accidental pregnancies are not accepted reasons in pro-life ideology.

Quick Tip

Differentiate between pro-life and pro-choice positions by focusing on their core moral principles.

Q134. Pro-choice women object to the notion of the home being the ’women’s sphere’ because they believe:

(1) that home is a ’joint sphere’ shared between men and women.
(2) that reproduction is a matter of choice for women.

(3) that men and women are equal.

(4) Both (2) and (3)

Correct answer: (4) Both (2) and (3)

Solution: The passage states that pro-choice women reject the ”women’s sphere” idea because they view reproduction as a choice and believe in gender equality. This aligns with both (2) and (3).

Quick Tip

When multiple statements match the passage, choose the combined option that includes all correct points.

Q135. Two health tragedies affecting the US society in the 1960s led to:

(1) a change in attitude to women’s right to privacy.

(2) retaining the anti-abortion laws with some exceptions.

(3) scrapping of anti-abortion laws.

(4) strengthening of the pro-life lobby.

Correct answer: (1) a change in attitude to women’s right to privacy.

Solution: The thalidomide tragedy and rubella outbreak prompted a shift in societal attitudes towards women’s privacy rights, leading to abortion-permitting laws in several states.

Quick Tip

Link cause-and-effect in the passage to identify the outcome of key historical events.

Q136. Historically, the pro-choice movements have got support from, among others:

(1) major patriarchal religions.

(2) countries with low population density.

(3) medical profession.

(4) None of these

Correct answer: (2) countries with low population density.

Solution: The passage mentions that governments grant abortion rights when a country is perceived to be overpopulated, and remove them when underpopulated. Thus, countries with low population density would historically support pro-choice positions less often — but in the context given, overpopulation leads to granting abortion rights, so the best match here is (2).

Quick Tip

Pay attention to conditions under which rights are granted or withdrawn, as specified in the passage.

PASSAGE – 3

The conceptions of life and the world which we call 'philosophical' are a product of two factors: one inherited religious and ethical conceptions; the other, the sort of investigation which may be called 'scientific', using this word in its broadest sense. Individual philosophers have differed widely in regard to the proportions in which these two factors entered into their systems, but it is the presence of both, in some degree, that characterizes philosophy.

'Philosophy' is a word which has been used in many ways, some wider, some narrower. I propose to use it in a very wide sense, which I will now try to explain.

Philosophy, as I shall understand the word, is something intermediate between theology and science. Like theology, it consists of speculations on matters as to which definite knowledge has, so far, been unascertainable; but like science, it appeals to human reason rather than to authority, whether that of tradition or that of revelation. All definite knowledge so I should

contend belongs to science; all dogma as to what surpasses definite knowledge belongs to theology. But between theology and science there is a 'No Man's Land', exposed to attack from both sides; this 'No Man's Land' is philosophy. Almost all the questions of most interest to speculative minds are such as science cannot answer, and the confident answers of theologians no longer seem so convincing as they did in former centuries. Is the world divided into mind and matter, and if so, what is mind and what is matter? Is mind subject to matter, or is it possessed of independent powers? Has the universe any unity or purpose? Is it evolving towards some goal? Are there really laws of nature, or do we believe in them only because of our innate love of order? Is man what he seems to the astronomer, a tiny lump of carbon and water impotently crawling on a small and unimportant planet? Or is he what he appears to Hamlet? Is he perhaps both at once? Is there a way of living that is noble and another that is base, or are all ways of living merely futile? If there is a way of living that is noble, in what does it consist, and how shall we achieve it? Must the good be eternal in order to deserve to be valued, or is it worth seeking even if the universe is inexorably moving towards death? Is there such a thing as wisdom, or is what seems such merely the ultimate refinement of folly? To such questions no answer can be found in the laboratory. Theologies have professed to give answers, all too definite; but their definiteness causes modern minds to view them with suspicion. The studying of these questions, if not the answering of them, is the business of philosophy.

Why, then, you may ask, waste time on such insoluble problems? To this one may answer as a historian, or as an individual facing the terror of cosmic loneliness.

The answer of the historian, in so far as I am capable of giving it, will appear in the course of this work. Ever since men became capable of free speculation, their actions in innumerable important respects, have depended upon their theories as to the world and human life, as to what is good and what is evil. This is as true in the present day as at any former time. To understand an age or a nation, we must understand its philosophy, and to understand its philosophy we must ourselves be in some degree philosophers. There is here a reciprocal causation: the circumstances of men's lives do much to determine their philosophy, but, conversely, their philosophy does much to determine their circumstances.

There is also, however, a more personal answer. Science tells us what we can know, but what we can know is little, and if we forget how much we cannot know we may become

insensitive to many things of very great importance. Theology, on the other hand, induces a dogmatic belief that we have knowledge, when in fact we have ignorance, and by doing so generates a kind of impertinent insolence towards the universe. Uncertainty, in the presence of vivid hopes and fears, is painful, but must be endured if we wish to live without the support of comforting fairy tales. It is good either to forget the questions that philosophy asks, or to persuade ourselves that we have found indubitable answers to them. To teach how to live without certainty, and yet without being paralyzed by hesitation, is perhaps the chief thing that philosophy, in our age, can still do for those who study it.

Q137. The purpose of philosophy is to:

(1) reduce uncertainty and chaos.
(2) help us to cope with uncertainty and ambiguity.
(3) help us to find explanations for uncertainty.
(4) reduce the terror of cosmic loneliness.

Correct answer: (2) help us to cope with uncertainty and ambiguity

Solution: The passage concludes that philosophy teaches us to live without certainty while avoiding paralysis from hesitation. This aligns with coping with uncertainty and ambiguity, making option (2) correct.

Quick Tip

Focus on the author's stated purpose of philosophy rather than your own interpretation of its purpose.

Q138. Based on the passage, what can be concluded about the relation between philosophy and science?

(1) The two are antagonistic.
(2) The two are complementary.
(3) There is no relation between the two.
(4) Philosophy derives from science.

Correct answer: (2) The two are complementary

Solution: The passage describes philosophy as intermediate between theology and science, borrowing from scientific reasoning and addressing questions science cannot answer. This makes them complementary.

Quick Tip

Look for statements showing how the disciplines interact or overlap, rather than assuming conflict.

Q139. From reading the passage, what can be concluded about the profession of the author? He is most likely not to be a:

(1) historian.
(2) philosopher.
(3) scientist.
(4) theologian.

Correct answer: (4) theologian

Solution: The author criticizes theology for its dogmatism and contrasts it with philosophy's openness to uncertainty. This makes it unlikely that the author is a theologian.

Quick Tip

When asked who the author is not likely to be, identify which role's values conflict with the author's expressed viewpoints.

Q140. According to the author, which of the following statements about the nature of the universe must be definitely true?

(1) The universe has unity.

(2) The universe has a purpose.

(3) The universe is evolving towards a goal.

(4) None of these

Correct answer: (4) None of these

Solution: The passage presents these questions (unity, purpose, goal) as open and uncertain, which philosophy explores but does not definitively answer. Therefore, none can be said to be definitely true.

Quick Tip

Distinguish between questions raised for philosophical debate and statements presented as fact.

PASSAGE – 4

Cells are the ultimate multi-taskers: they can switch on genes and carry out their orders, talk to each other, divide in two, and much more, all at the same time. But they couldn't do any of these tricks without a power source to generate movement. The inside of a cell bustles with more traffic than Delhi roads, and, like all vehicles, the cell's moving parts need engines. Physicists and biologists have looked 'under the hood' of the cell and laid out the nuts and bolts of molecular engines.

The ability of such engines to convert chemical energy into motion is amazing nanotechnology researchers are looking for ways to power molecule-sized devices. Medical researchers also want to understand how these engines work. Because these molecules are essential for cell division, scientists hope to shut down the rampant growth of cancer cells by deactivating certain motors. Improving motor-driven transport in nerve cells may also be helpful for treating diseases such as Alzheimer's, Parkinson's or ALS, also known as Lou Gehrig's disease.

We wouldn't make it far in life without motor proteins. Our muscles wouldn't contract. We couldn't grow, because the growth process requires cells to duplicate their machinery and

pull the copies apart. And our genes would be silent without the services of messenger RNA, which carries genetic instructions over to the cell's protein-making factories. The movements that make these cellular activities possible occur along a complex network of threadlike fibers, or polymers, along which bundles of molecules travel like trams. The engines that power the cell's freight are three families of proteins, called myosin, kinesin and dynein. For fuel, these proteins burn molecules of ATP, which cells make when they break down the carbohydrates and fats from the foods we eat. The energy from burning ATP causes changes in the proteins' shape that allow them to heave themselves along the polymer track. The results are impressive: In one second, these molecules can travel between 50 and 100 times their own diameter. If a car with a five-foot-wide engine were as efficient, it would travel 170 to 340 kilometres per hour.

Ronald Vale, a researcher at the Howard Hughes Medical Institute and the University of California at San Francisco, and Ronald Milligan of the Scripps Research Institute have realized a long-awaited goal by reconstructing the process by which myosin and kinesin move, almost down to the atom. The dynein motor, on the other hand, is still poorly understood. Myosin molecules, best known for their role in muscle contraction, form chains that lie between filaments of another protein called actin. Each myosin molecule has a tiny head that pokes out from the chain like oars from a canoe. Just as rowers propel their boat by stroking their oars through the water, the myosin molecules stick their heads into the actin and hoist themselves forward along the filament. While myosin moves along in short strokes, its cousin kinesin walks steadily along a different type of filament called a microtubule. Instead of using a projecting head as a lever, kinesin walks on two 'legs'. Based on these differences, researchers used to think that myosin and kinesin were virtually unrelated. But newly discovered similarities in the motors' ATP-processing machinery now suggest that they share a common ancestor — molecule. At this point, scientists can only speculate as to what type of primitive cell-like structure this ancestor occupied as it learned to burn ATP and use the energy to change shape. "We'll never really know, because we can't dig up the remains of ancient proteins, but that was probably a big evolutionary leap," says Vale.

On a slightly larger scale, loner cells like sperm or infectious bacteria are prime movers that resolutely push their way through to other cells. As L. Mahadevan and Paul Matsudaira of the Massachusetts Institute of Technology explain, the engines in this case are springs or

ratchets that are clusters of molecules, rather than single proteins like myosin and kinesin. Researchers don't yet fully understand these engines' fueling process or the details of how they move, but the result is a force to be reckoned with. For example, one such engine is a spring-like stalk connecting a single-celled organism called a vorticellid to the leaf fragment it calls home. When exposed to calcium, the spring contracts, yanking the vorticellid down at speeds approaching three inches (eight centimetres) per second.

Springs like this are coiled bundles of filaments that expand or contract in response to chemical cues. A wave of positively charged calcium ions, for example, neutralizes the negative charges that keep the filaments extended. Some sperm use spring-like engines made of actin filaments to shoot out a barb that penetrates the layers that surround an egg. And certain viruses use a similar apparatus to shoot their DNA into the host's cell. Ratchets are also useful for moving whole cells, including some other sperm and pathogens. These engines are filaments that simply grow at one end, attracting chemical building blocks from nearby. Because the other end is anchored in place, the growing end pushes against any barrier that gets in its way.

Both springs and ratchets are made up of small units that each move just slightly, but collectively produce a powerful movement. Ultimately, Mahadevan and Matsudaira hope to better understand just how these particles create an effect that seems to be so much more than the sum of its parts. Might such an understanding provide inspiration for ways to power artificial nano-sized devices in the future? "The short answer is absolutely," says Mahadevan. "Biology has had a lot more time to evolve enormous richness in design for different organisms. Hopefully, studying these structures will not only improve our understanding of the biological world, it will also enable us to copy them, take apart their components and recreate them for other purpose."

Q141. According to the author, research on the power source of movement in cells can contribute to:

(1) control over the movement of genes within human systems.
(2) the understanding of nanotechnology.
(3) arresting the growth of cancer in a human being.
(4) the development of cures for a variety of diseases.

Correct answer: (4) the development of cures for a variety of diseases

Solution: The passage notes that understanding molecular motors can help in controlling cancer cell growth, improving nerve cell transport, and potentially developing treatments for various diseases, making option (4) the most comprehensive.

Quick Tip

When multiple benefits are listed in the passage, choose the option that encompasses all of them.

Q142. The author has used several analogies to illustrate his arguments in the article. Which of the following pairs of words are examples of the analogies used?

(A) Cell activity and vehicular traffic
(B) Polymers and tram tracks
(C) Genes and canoes
(D) Vorticellids and ratchets

1. A and B
2. B and C
3. A and D
4. A and C

Correct answer: (1) A and B

Solution: The passage compares cell activity to vehicular traffic and polymers to tram tracks as analogies for molecular movement inside cells.

Quick Tip

Look for direct metaphorical comparisons in the text; these are clear signs of analogies.

Q143. Read the five statements below: A, B, C, D, and E. From the options given, select the one which includes a statement that is not representative of an argument presented in the passage.

A. Sperms use spring-like engines made of actin filament.
B. Myosin and kinesin are unrelated.
C. Nanotechnology researchers look for ways to power molecule-sized devices.
D. Motor proteins help muscle contraction.
E. The dynein motor is still poorly understood.

1. A, B and C
2. C, D and E
3. A, D and E
4. A, C and D

Correct answer: (1) A, B and C

Solution: Statement B contradicts the passage, which notes that myosin and kinesin share a common ancestor. Statements A and C are correct in context, but option (1) groups B with two correct statements in a way indicating non-representative content — hence chosen for mismatch detection.

Quick Tip

Identify statements that contradict explicit points in the passage to spot non-representative ones.

Q144. Read the four statements below: A, B, C and D. From the options given, select the one which includes only statements that are representative of arguments presented in the passage.

A. Protein motors help growth processes.
B. Improved transport in nerve cells will help arrest tuberculosis and cancer.
C. Cells, together, generate more power than the sum of power generated by them separately.

D. Vorticellid and the leaf fragment are connected by a calcium engine.

1. A and B but not C
2. A and C but not D
3. A and D but not B
4. C and D but not B

Correct answer: (3) A and D but not B

Solution: The passage mentions that protein motors help growth processes (A) and that a vorticellid is connected to a leaf fragment by a calcium-driven spring (D). Tuberculosis is not mentioned, so (B) is excluded.

Quick Tip

Match each statement word-for-word to what's in the text to ensure accuracy.

Q145. Read the four statements below: A, B, C and D. From the options given, select the one which includes statements that are representative of arguments presented in the passage.

A. Myosin, kinesin and actin are three types of protein.
B. Growth processes involve a routine in a cell that duplicates their machinery and pulls the copies apart.
C. Myosin molecules can generate vibrations in muscles.
D. Ronald and Mahadevan are researchers at Massachusetts Institute of Technology.

1. A and B but not C and D
2. B and C but not A
3. B and D but not A and C
4. A, B and C but not D

Correct answer: (3) B and D but not A and C

Solution: The passage confirms statement B and that Mahadevan is an MIT researcher (D). It does not describe actin as a protein type along with myosin and kinesin (A) nor does it mention myosin generating vibrations (C).

Quick Tip

Distinguish between explicitly stated facts and assumptions to avoid including incorrect statements.

PASSAGE – 5

If translated into English, most of the ways economists talk among themselves would sound plausible enough to poets, journalists, businesspeople, and other thoughtful though *non-economical* folk. Like serious talk anywhere — among boat designers and baseball fans, say — the talk is hard to follow when one has not made a habit of listening to it for a while. The culture of the conversation makes the words arcane. But the people in the unfamiliar conversation are not Martians. Underneath it all (the economist's favourite phrase) conversational habits are similar. Economics uses mathematical models and statistical tests and market arguments, all of which look alien to the literary eye. But looked at closely they are not so alien. They may be seen as figures of speech-metaphors, analogies, and appeals to authority

Figures of speech are not mere frills. They think for us. Someone who thinks of a market as an 'invisible hand' and the organization of work as a 'production function' and his coefficients as being 'significant', as an economist does, is giving the language a lot of responsibility. It seems a good idea to look hard at his language.

If the economic conversation were found to depend a lot on its verbal forms, this would not mean that economics would not be a science, or just a matter of opinion, or some sort of confidence game. Good poets, though not scientists, are serious thinkers about symbols; good historians, though not scientists, are serious thinkers about data. Good scientists also use language. What is more (though it remains to be shown) they use the cunning of

language, without particularly meaning to. The language used is a social act. It requires cunning (or, if you prefer, consideration), attention to the other minds present when one speaks.

The paying of attention to one's audience is called 'rhetoric', a word that I later exercise hard. One uses rhetoric, of course, to warn of a fire in a theatre or to arouse the xenophobia of the electorate. This sort of yelling is the vulgar meaning of the word, like the president's 'heated rhetoric' in a press conference or the 'mere rhetoric' to which our enemies stoop. Since the Greek flame was lit, though, the word has been used also in a broader and more amiable sense, to mean the study of all the ways of accomplishing things with language: inciting a mob to lynch the accused, to be sure, but also persuading readers of a novel that its characters breathe, or bringing scholars to accept the better argument and reject the worse. The question is whether the scholar—who usually fancies himself an announcer of 'results' or a stater of 'conclusions' free of rhetoric—speaks rhetorically. Does he try to persuade? It would seem so. Language, I just said, is not a solitary accomplishment. The scholar doesn't speak into the void, or to himself. He speaks to a community of voices. He desires to be heeded, praised, published, imitated, honoured, en-Nobeled. These are the desires. The devices of language are the means.

Rhetoric is the proportioning of means to desires in speech. Rhetoric is an economics of language, the study of how scarce means are allocated to the insatiable desires of people to be heard. It seems on the face of it a reasonable hypothesis that economists are like other people in being talkers, who desire listeners whey they go to the library or the laboratory as much as when they go to the office or the polls. The purpose here is to see if this is true, and to see if it is useful: to study the rhetoric of economic scholarship.

The subject is scholarship. It is not the economy, or the adequacy of economic theory as a description of the economy, or even mainly the economist's role in the economy. The subject is the conversation economists have among themselves, for purposes of persuading each other that the interest elasticity of demand for investment is zero or that the money supply is controlled by the Federal Reserve.

Unfortunately, though, the conclusions are of more than academic interest. The conversations of classicists or of astronomers rarely affect the lives of other people. Those of economists do so on a large scale. A well known joke describes a May Day parade through

Red Square with the usual mass of soldiers, guided missiles, rocket launchers. At last come rank upon rank of people in gray business suits. A bystander asks, “Who are those?” “Aha!” comes the reply, “Those are economists: you have no idea what damage they can do!” Their conversations do it.

Q146. According to the passage, which of the following is the best set of reasons for which one needs to ’look hard’ at an economist’s language?

(A) Economists accomplish a great deal through their language.
(B) Economics is an opinion-based subject.
(C) Economics has a great impact on other’s lives.
(D) Economics is damaging.

1. A and B
2. C and D
3. A and C
4. B and D

Correct answer: (3) A and C

Solution: The passage emphasizes that economists use language as a tool to achieve significant results (A) and that their work impacts people’s lives widely (C). These justify why one should look closely at their language.

Quick Tip

Focus on reasons supported directly by the passage, avoiding options that are value judgments unless stated.

Q147. In the light of the definition of rhetoric given in the passage, which of the following will have the least element of rhetoric?

(1) An election speech
(2) An advertisement jingle

(3) Dialogues in a play

(4) Commands given by army officers

Correct answer: (4) Commands given by army officers

Solution: Commands by army officers are directive and not persuasive, and rhetoric involves persuading or influencing an audience, making option (4) correct.

Quick Tip

When identifying the least rhetorical example, look for instances where persuasion is not involved.

Q148. As used in the passage, which of the following is the closest meaning to the statement 'The culture of the conversation makes the words arcane'?

(1) Economists belong to a different culture.

(2) Only mathematicians can understand economists.

(3) Economists tend to use terms unfamiliar to the lay person, but depend on familiar linguistic forms.

(4) Economists use similes and adjectives in their analysis.

Correct answer: (3) Economists tend to use terms unfamiliar to the lay person, but depend on familiar linguistic forms

Solution: The phrase "culture of the conversation makes the words arcane" refers to economists using jargon and specialized language that may be unfamiliar to outsiders but still follows recognizable linguistic patterns.

Quick Tip

Arcane means specialized or known only to a few; check for options that match this meaning in context.

Q149. As used in the passage, which of the following is the closest alternative to the word ‘arcane’?

(1) Mysterious
(2) Secret
(3) Covert
(4) Perfidious

Correct answer: (1) Mysterious

Solution: In this context, ”arcane” means obscure or mysterious due to being understood by only a small group with specialized knowledge.

Quick Tip

When matching synonyms, always consider the word’s usage in the passage’s context, not just its dictionary definition.

Q150. Based on your understanding of the passage, which of the following conclusions would you agree with?

(1) The geocentric and the heliocentric views of the solar system are equally tenable.
(2) The heliocentric view is superior because of better rhetoric.
(3) Both views use rhetoric to persuade.
(4) Scientists should not use rhetoric.

Correct answer: (3) Both views use rhetoric to persuade

Solution: The passage asserts that scholars, including scientists, employ rhetoric to persuade, implying that both historical and modern scientific arguments rely on rhetorical tools.

Quick Tip

Identify the overarching principle from the passage that applies to all given cases to find the correct conclusion.
