

CUET-UG General Aptitude Test Sample Paper-23

Duration: 1 Hour

Maximum Marks: 250

Instructions

- This paper contains a total of 50 Multiple Choice Questions.
- Each correct answer carries **+5 marks**.
- Each incorrect answer carries **-1 mark**.
- No negative marking for unattempted questions.

Q1. If the cost price of 20 articles is equal to the selling price of 15 articles, what is the profit percentage?

- (A) 25%
- (B) 33.33%
- (C) 50%
- (D) 30%

Q2. A sum of money doubles itself in 8 years at Simple Interest. In how many years will it triple itself?

- (A) 12 years
- (B) 16 years
- (C) 24 years
- (D) 10 years

Q3. If 'ROSE' is coded as 'TQUG', how is 'BISCUIT' coded in that language?

- (A) DKUEWKV
- (B) DKVEWKV
- (C) DKUEWLK



(D) CJTDVJU

Q4. Statement I: The Governor of a State is appointed by the President.
Statement II: The minimum age to become the Governor is 35 years.
Choose the correct option:

- (A) Both I and II are correct
- (B) Both I and II are incorrect
- (C) I is correct, II is incorrect
- (D) I is incorrect, II is correct

Q5. A and B can do a piece of work in 12 days, B and C in 15 days, and C and A in 20 days. How many days will they take together?

- (A) 5 days
- (B) 8 days
- (C) 10 days
- (D) 12 days

Q6. Pointing to a lady, a man said, "The son of her only brother is the brother of my wife." How is the lady related to the man?

- (A) Mother-in-law
- (B) Sister of father-in-law
- (C) Grandmother
- (D) Sister

Q7. Which of the following Harappan sites is located in Gujarat?

- (A) Kalibangan
- (B) Lothal
- (C) Banawali



(D) Ropar

Q8. The HCF of two numbers is 11 and their LCM is 7700. If one of the numbers is 275, find the other.

(A) 279

(B) 308

(C) 318

(D) 280

Q9. Find the missing number in the series: 2, 6, 12, 20, 30, ?

(A) 40

(B) 42

(C) 44

(D) 46

Q10. Which vitamin is also known as Ascorbic Acid?

(A) Vitamin A

(B) Vitamin B12

(C) Vitamin C

(D) Vitamin D

Q11. A train 150m long passes a pole in 15 seconds and another train of the same length travelling in the opposite direction in 12 seconds. The speed of the second train is:

(A) 45 km/h

(B) 54 km/h

(C) 60 km/h



(D) 72 km/h

Q12. If $x + \frac{1}{x} = 5$, then the value of $x^2 + \frac{1}{x^2}$ is:

(A) 23

(B) 25

(C) 27

(D) 21

Q13. Match List I (River) with List II (Dam): (a) Krishna - (ii) Nagarjuna Sagar, (b) Bhagirathi - (i) Tehri, (c) Mahanadi - (iv) Hirakud, (d) Narmada - (iii) Sardar Sarovar. Choose the correct option:

(A) a-ii, b-i, c-iv, d-iii

(B) a-i, b-ii, c-iii, d-iv

(C) a-iv, b-iii, c-ii, d-i

(D) a-ii, b-iv, c-i, d-iii

Q14. A reduction of 20% in the price of sugar enables a purchaser to obtain 4 kg more for ₹ 160. What is the original price per kg?

(A) ₹ 10

(B) ₹ 8

(C) ₹ 12

(D) ₹ 15

Q15. Find the angle between the hour hand and the minute hand of a clock when the time is 3:25.

(A) 45.5°

(B) 47.5°

(C) 52.5°



(D) 60°

Q16. Which article of the Indian Constitution deals with the 'Abolition of Untouchability'?

(A) Article 14

(B) Article 17

(C) Article 19

(D) Article 21

Q17. Six people P, Q, R, S, T, and U are sitting in a circle facing the center. P is to the immediate left of U. R is between P and S. T is to the immediate left of Q. Who is sitting opposite to R?

(A) P

(B) Q

(C) T

(D) U

Q18. The volume of a right circular cylinder whose height is 14 cm and base radius is 3 cm is:

(A) 396 cm^3

(B) 402 cm^3

(C) 380 cm^3

(D) 412 cm^3

Q19. Identify the non-metal which remains liquid at room temperature.

(A) Mercury

(B) Bromine

(C) Chlorine



(D) Phosphorus

Q20. If 1st January 2024 was a Monday, what day will it be on 1st January 2025?

(A) Tuesday

(B) Wednesday

(C) Thursday

(D) Monday

Q21. A shopkeeper marks his goods 40% above the cost price and allows a discount of 25%. His profit percentage is:

(A) 5%

(B) 10%

(C) 15%

(D) 20%

Q22. Choose the odd one out:

(A) Liver

(B) Kidney

(C) Pancreas

(D) Heart

Q23. In a certain code, 'TRUTH' is written as 'SUQVTVSSGI'. How is 'FALSE' written?

(A) EGZBKMTRDF

(B) EGZBKMRTDF

(C) EGZBLMRTDF

(D) EGZBKMREDF



- Q24.** Who was the President of the 1924 Belgaum session of the Indian National Congress?
- (A) Jawaharlal Nehru
 - (B) Mahatma Gandhi
 - (C) Sardar Patel
 - (D) Sarojini Naidu
- Q25.** The sum of three consecutive even numbers is 78. The largest number is:
- (A) 24
 - (B) 26
 - (C) 28
 - (D) 30
- Q26.** Assertion (A): Sound travels faster in solids than in gases.
Reason (R): The density of solids is very high compared to gases.
- (A) Both A and R are true and R is the correct explanation of A
 - (B) Both A and R are true but R is NOT the correct explanation of A
 - (C) A is true but R is false
 - (D) A is false but R is true
- Q27.** A man walks 5 km towards South, then turns right and walks 3 km. He again turns left and walks 5 km. In which direction is he now from the starting point?
- (A) South
 - (B) South-West
 - (C) South-East
 - (D) West



- Q28.** The ratio of the ages of A and B is 4:5. After 6 years, the ratio becomes 6:7. The present age of B is:
- (A) 12 years
 - (B) 15 years
 - (C) 20 years
 - (D) 25 years
- Q29.** Who is the current Chairman of ISRO (as of 2024/25 context)?
- (A) K. Sivan
 - (B) S. Somanath
 - (C) G. Satheesh Reddy
 - (D) A.S. Kiran Kumar
- Q30.** If the diagonal of a square is $10\sqrt{2}$ cm, its perimeter is:
- (A) 40 cm
 - (B) 20 cm
 - (C) 30 cm
 - (D) 100 cm
- Q31.** Deep blue color is imparted to glass by the presence of:
- (A) Cupric oxide
 - (B) Cobalt oxide
 - (C) Ferrous oxide
 - (D) Nickel oxide
- Q32.** Which city hosted the G20 Summit in 2023?



- (A) Bali
- (B) New Delhi
- (C) Rio de Janeiro
- (D) Osaka

Q33. Find the missing term: 1, 8, 27, 64, 125, ?

- (A) 212
- (B) 216
- (C) 225
- (D) 256

Q34. A person sells an item for ₹ 960 and incurs a loss of 4%. At what price should he sell it to gain 10%?

- (A) ₹ 1100
- (B) ₹ 1050
- (C) ₹ 1080
- (D) ₹ 1200

Q35. Statement I: The Richter scale is used to measure the intensity of an earthquake.
Statement II: The Richter scale is a linear scale.

- (A) Both I and II are true
- (B) Both I and II are false
- (C) I is true, II is false
- (D) I is false, II is true

Q36. The L.C.M. of $\frac{2}{3}$, $\frac{3}{5}$, $\frac{4}{7}$, $\frac{9}{13}$ is:

- (A) 36



- (B) $1/36$
- (C) 12
- (D) 18

Q37. A, B, C, D, and E are five friends. A is shorter than B but taller than E. C is the tallest. D is shorter than B and taller than A. Who is the second tallest?

- (A) A
- (B) B
- (C) D
- (D) E

Q38. 'Project Tiger' was launched in India in the year:

- (A) 1970
- (B) 1973
- (C) 1980
- (D) 1992

Q39. The area of an equilateral triangle with side 4 cm is:

- (A) $4\sqrt{3} \text{ cm}^2$
- (B) $8\sqrt{3} \text{ cm}^2$
- (C) $16\sqrt{3} \text{ cm}^2$
- (D) 4 cm^2

Q40. How many rectangles are there in a standard chessboard?

- (A) 64
- (B) 204
- (C) 1296



(D) 512

Q41. Permanent hardness of water is removed by adding:

- (A) Alum
- (B) Washing Soda
- (C) Potassium Permanganate
- (D) Lime

Q42. If $3^{(x-y)} = 27$ and $3^{(x+y)} = 243$, then x is equal to:

- (A) 2
- (B) 4
- (C) 0
- (D) 6

Q43. Which of the following is not a member of SAARC?

- (A) Bhutan
- (B) Maldives
- (C) Myanmar
- (D) Nepal

Q44. A wheel makes 1000 revolutions in covering a distance of 88 km. The radius of the wheel is:

- (A) 14 m
- (B) 24 m
- (C) 7 m
- (D) 12 m



Q45. In a row of 40 students, R is 11th from the right and M is 14th from the left. How many students are between them?

- (A) 15
- (B) 16
- (C) 14
- (D) 13

Q46. 'Duleep Trophy' is associated with which sport?

- (A) Hockey
- (B) Football
- (C) Cricket
- (D) Tennis

Q47. The value of $\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}}$ is:

- (A) 4
- (B) 6
- (C) 8
- (D) 10

Q48. A cube of side 4 cm is painted on all its faces and then cut into unit cubes of side 1 cm. How many cubes will have no face painted?

- (A) 8
- (B) 4
- (C) 16
- (D) 27

Q49. 'Kyoto Protocol' is related to:



- (A) Ozone depletion
- (B) Greenhouse gases
- (C) Biodiversity
- (D) Wetland conservation

Q50. If the ratio of income of A and B is 3:2 and their expenditure ratio is 5:3. If each saves ₹ 1000, A's income is:

- (A) ₹ 3000
- (B) ₹ 4000
- (C) ₹ 6000
- (D) ₹ 9000



Detailed Solutions**Q1.****Solution****Concept:**

The relationship between the Cost Price (CP) and Selling Price (SP) determines the profit or loss. Profit percentage is calculated based on the Cost Price using the formula:

$$\text{Profit \%} = \left(\frac{\text{Profit}}{\text{CP}} \right) \times 100$$

where Profit = SP – CP.

Solution:

1. Let the Cost Price of 1 article be x . 2. Therefore, the Cost Price (CP) of 20 articles = $20x$. 3. According to the question, the Selling Price (SP) of 15 articles is equal to the CP of 20 articles.

$$\text{SP of 15 articles} = 20x$$

4. To find the profit, we need the CP and SP of the same number of articles. Let's find the CP of 15 articles:

$$\text{CP of 15 articles} = 15x$$

5. Now, we calculate the Profit for 15 articles:

$$\text{Profit} = \text{SP} - \text{CP}$$

$$\text{Profit} = 20x - 15x = 5x$$

6. Calculate the Profit Percentage:

$$\text{Profit \%} = \left(\frac{5x}{15x} \right) \times 100$$

$$\text{Profit \%} = \frac{1}{3} \times 100 = 33.33\%$$

Final Answer: The profit percentage is 33.33%.

Answer: (B)



Q2.

Solution**Concept:**

In Simple Interest (SI), the interest remains constant every year. The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Amount (A) is given by $P + SI$. If a sum doubles, the interest earned is equal to the principal (P).

Solution:

1. Let the initial Principal be P . 2. The sum doubles itself in 8 years. This means the Amount (A) becomes $2P$. 3. The Interest (SI) earned in 8 years is:

$$SI = A - P = 2P - P = P$$

4. This means the sum earns a simple interest of P in 8 years. 5. We want the sum to triple itself. This means the new Amount (A') should be $3P$. 6. The required Interest (SI') for the sum to triple is:

$$SI' = A' - P = 3P - P = 2P$$

7. Since simple interest is proportional to time ($SI \propto T$): If interest P is earned in 8 years, Then interest $2P$ will be earned in $8 \times 2 = 16$ years.

Final Answer: The sum will triple itself in 16 years.

Answer: (B)

Q3.

Solution**Concept:**

Coding-Decoding logic involves identifying the pattern of shifts in the alphabet. Each letter of the word is shifted forward or backward by a specific number of positions in the English alphabetical sequence.

Solution:

1. Analyze the word 'ROSE' and its code 'TQUG': R is the 18th letter, T is the 20th letter. (Shift: +2) O is the 15th letter, Q is the 17th letter. (Shift: +2) S is the 19th letter, U is the 21st letter. (Shift: +2) E is the 5th letter, G is the 7th letter. (Shift: +2) 2. Apply the same (+2) shift logic to the word 'BISCUIT': B + 2 = D I + 2 = K S + 2 = U C + 2 = E U + 2 = W I + 2 = K T + 2 = V 3. Combining the results, we get the code 'DKUEWKV'.

Final Answer: The code for BISCUIT is DKUEWKV.

Answer: (A)



Q4.

Solution**Concept:**

This question pertains to the Indian Polity regarding the executive head of a state. The Governor is appointed by the President of India (Article 155). The qualifications for being a Governor are mentioned in Article 157.

Solution:

1. Statement I: "The Governor of a State is appointed by the President." This is factually correct as per the Constitution of India. The Governor holds office during the pleasure of the President. 2. Statement II: "The minimum age to become the Governor is 30 years." This is factually incorrect. 3. According to Article 157, a person must be a citizen of India and must have completed the age of 35 years to be eligible for appointment as a Governor. 4. Since Statement I is correct and Statement II is incorrect, the third option is the right choice.

Final Answer: I is correct, II is incorrect.

Answer: (C)

Q5.

Solution**Concept:**

Work and Time problems can be solved using the efficiency method. If a person completes a work in n days, their one-day work is $1/n$. When people work in pairs, we add their combined efficiencies.

Solution:

1. Let the total work be the LCM of 12, 15, and 20.

$$\text{Total Work} = 60 \text{ units}$$

2. Calculate the daily efficiency (work per day): Efficiency of $(A + B) = 60/12 = 5$ units/day
 Efficiency of $(B + C) = 60/15 = 4$ units/day
 Efficiency of $(C + A) = 60/20 = 3$ units/day
 Adding all three efficiencies:

$$2(A + B + C) = 5 + 4 + 3 = 12 \text{ units/day}$$

4. Therefore, efficiency of $(A + B + C) = 12/2 = 6$ units/day. 5. Time taken by $A, B,$ and C together:

$$\text{Time} = \frac{\text{Total Work}}{\text{Total Efficiency}}$$

$$\text{Time} = \frac{60}{6} = 10 \text{ days}$$

Final Answer: They will take 10 days to complete the work together.

Answer: (C)



Q6.

Solution**Concept:**

Blood relation problems are solved by mapping the family tree. The phrase "only brother" and "brother of my wife" are key descriptors that link the speaker to the person being described through a specific relative.

Solution:

1. Let the lady be 'L'. 2. The man said: "The son of her (L's) only brother is the brother of my wife." 3. Let the "brother of my wife" be 'B'. Since B is the brother of the man's wife, B is the man's brother-in-law. 4. The statement says B is the "son of her (L's) only brother." 5. This means the man's brother-in-law (B) is the son of the lady's brother. 6. Therefore, the lady's brother is the father-in-law of the man (since his son is the brother of the man's wife). 7. The lady is the sister of the man's father-in-law.

Final Answer: The lady is the sister of the father-in-law.

Answer: (B)

Q7.

Solution**Concept:**

Ancient Indian History, specifically the Indus Valley Civilization (Harappan Culture), identifies major urban centers based on their geographic locations in modern-day India and Pakistan.

Solution:

1. Kalibangan is located in the Hanumangarh district of Rajasthan. It is famous for evidence of a ploughed field. 2. Banawali is located in the Fatehabad district of Haryana. 3. Ropar (Rupnagar) is located in Punjab, near the Sutlej river. 4. Lothal was a major port city of the Harappan civilization and is located in the Bhal region of modern-day Gujarat. It is characterized by its dockyard. 5. Therefore, among the given options, Lothal is the site situated in Gujarat.

Final Answer: Lothal is located in Gujarat.

Answer: (B)



Q8.

Solution**Concept:**

There is a fundamental relationship between two numbers and their Greatest Common Divisor (HCF) and Least Common Multiple (LCM). The product of the two numbers is always equal to the product of their HCF and LCM.

$$\text{First Number} \times \text{Second Number} = \text{HCF} \times \text{LCM}$$

Solution:

1. Given that the HCF of the two numbers is 11. 2. Given that the LCM of the two numbers is 7700. 3. One of the numbers is given as 275. 4. Let the other number be y . 5. Applying the formula:

$$275 \times y = 11 \times 7700$$

6. Solve for y :

$$y = \frac{11 \times 7700}{275}$$

7. Divide 275 by 11: $275/11 = 25$. 8. Now, divide 7700 by 25:

$$y = \frac{7700}{25} = 308$$

Final Answer: The other number is 308.

Answer: (B)



Q9.

Solution**Concept:**

Number series patterns are identified by looking at the difference between consecutive terms or by recognizing squares, cubes, or mathematical progressions ($n^2 + n$).

Solution:

1. Examine the differences between the consecutive numbers in the series:

$$6 - 2 = 4$$

$$12 - 6 = 6$$

$$20 - 12 = 8$$

$$30 - 20 = 10$$

2. The differences are 4, 6, 8, 10. These differences are increasing by 2 (an arithmetic progression).

3. The next difference should be $10 + 2 = 12$. 4. Therefore, the next number in the series is $30 + 12 = 42$. 5. Alternatively, notice the pattern $n^2 + n$: $1^2 + 1 = 2$ $2^2 + 2 = 6$ $3^2 + 3 = 12$ $4^2 + 4 = 20$ $5^2 + 5 = 30$ $6^2 + 6 = 36 + 6 = 42$

Final Answer: The missing number is 42.

Answer: (B)

Q10.

Solution**Concept:**

Vitamins have specific chemical names associated with them. Ascorbic acid is a water-soluble vitamin essential for the synthesis of collagen and immune function.

Solution:

1. Vitamin A is chemically known as Retinol. Deficiency leads to night blindness. 2. Vitamin B12 is chemically known as Cyanocobalamin. It is essential for red blood cell formation. 3. Vitamin D is chemically known as Calciferol. It is synthesized by the body in the presence of sunlight. 4. Vitamin C is chemically known as Ascorbic Acid. It is found in citrus fruits like oranges and lemons. Its deficiency leads to a disease called Scurvy.

Final Answer: Vitamin C is known as Ascorbic Acid.

Answer: (C)



Q11.

Solution**Concept:**

When two objects move relative to each other, their relative speed is the sum of their speeds if they move in opposite directions, and the difference if they move in the same direction. Speed is calculated as:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

In the case of two trains crossing each other, the total distance covered is the sum of the lengths of both trains.

Solution:

1. First, find the speed of the first train (S_1). It crosses a pole in 15 seconds.

$$S_1 = \frac{\text{Length of train 1}}{\text{Time}} = \frac{150}{15} = 10 \text{ m/s}$$

2. When the first train crosses the second train of the same length (150 m) moving in the opposite direction, the total distance is:

$$\text{Total Distance} = 150 + 150 = 300 \text{ m}$$

3. The relative speed (S_{rel}) is $S_1 + S_2$, where S_2 is the speed of the second train. 4. Using the given time (12 seconds) for crossing:

$$S_{rel} = \frac{300}{12} = 25 \text{ m/s}$$

5. Since $S_{rel} = S_1 + S_2$:

$$25 = 10 + S_2 \implies S_2 = 15 \text{ m/s}$$

6. Convert S_2 from m/s to km/h:

$$S_2 = 15 \times \frac{18}{5} = 3 \times 18 = 54 \text{ km/h}$$

Final Answer: The speed of the second train is 54 km/h.

Answer: (B)



Q12.

Solution**Concept:**

This problem uses the algebraic identity:

$$(a + b)^2 = a^2 + b^2 + 2ab$$

By substituting $a = x$ and $b = 1/x$, we can find the value of $x^2 + 1/x^2$ when the value of $x + 1/x$ is known.

Solution:

1. Given: $x + \frac{1}{x} = 5$. 2. Square both sides of the equation:

$$\left(x + \frac{1}{x}\right)^2 = 5^2$$

3. Expand using the identity $(a + b)^2 = a^2 + b^2 + 2ab$:

$$x^2 + \left(\frac{1}{x}\right)^2 + 2(x)\left(\frac{1}{x}\right) = 25$$

4. Simplify the term $2(x)(1/x)$:

$$x^2 + \frac{1}{x^2} + 2 = 25$$

5. Subtract 2 from both sides to isolate $x^2 + \frac{1}{x^2}$:

$$x^2 + \frac{1}{x^2} = 25 - 2 = 23$$

Final Answer: The value is 23.

Answer: (A)



Q13.

Solution**Concept:**

This is a General Knowledge question based on Geography, specifically focused on major river valley projects (multipurpose dams) in India. Each major river has iconic dams associated with it for irrigation and hydroelectric power.

Solution:

1. **Krishna River:** The Nagarjuna Sagar Dam is built across the Krishna river, located between Guntur district, Andhra Pradesh and Nalgonda district, Telangana. 2. **Bhagirathi River:** The Tehri Dam, the highest dam in India, is constructed on the Bhagirathi river in Uttarakhand. 3. **Mahanadi River:** The Hirakud Dam, one of the longest dams in the world, is built across the Mahanadi river in Odisha. 4. **Narmada River:** The Sardar Sarovar Dam is a concrete gravity dam built on the Narmada river in Gujarat. 5. Matching the list: (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii).

Final Answer: a-ii, b-i, c-iv, d-iii is the correct match.

Answer: (A)

Q14.

Solution**Concept:**

When the price of a commodity decreases, the quantity that can be purchased with the same amount of money increases. The relationship is given by:

$$\text{Quantity} = \frac{\text{Total Expenditure}}{\text{Price per unit}}$$

Solution:

1. Let the original price per kg be x . 2. The total expenditure is ₹ 160. 3. Original quantity purchased = $160/x$. 4. New price after a 20% reduction = $x - 0.20x = 0.80x$. 5. New quantity purchased = $160/0.80x = 200/x$. 6. According to the question, the difference in quantity is 4 kg:

$$\frac{200}{x} - \frac{160}{x} = 4$$

7. Solve for x :

$$\frac{40}{x} = 4 \implies 4x = 40 \implies x = 10$$

Final Answer: The original price per kg was ₹ 10.

Answer: (A)



Q15.

Solution**Concept:**

The angle between the hands of a clock can be calculated using the formula:

$$\theta = |30H - 5.5M|$$

where H is the hour and M is the minutes. This accounts for the fact that the hour hand moves 0.5° every minute, while the minute hand moves 6° every minute.

Solution:

1. Given time is 3:25. Here, $H = 3$ and $M = 25$. 2. Substitute the values into the formula:

$$\theta = |30(3) - 5.5(25)|$$

3. Calculate the terms:

$$30 \times 3 = 90$$

$$5.5 \times 25 = 137.5$$

4. Find the absolute difference:

$$\theta = |90 - 137.5| = |-47.5| = 47.5^\circ$$

Final Answer: The angle is 47.5° .

Answer: (B)

Q16.

Solution**Concept:**

Fundamental Rights are enshrined in Part III of the Constitution of India. Article 17 is a significant provision aimed at social reform and establishing equality by prohibiting the practice of untouchability in any form.

Solution:

1. Article 14 deals with Equality before Law. 2. Article 17 specifically states: "Untouchability is abolished and its practice in any form is forbidden." It is one of the few fundamental rights available against private individuals as well as the State. 3. Article 19 deals with the Protection of certain rights regarding freedom of speech, etc. 4. Article 21 deals with the Protection of life and personal liberty. 5. Therefore, the provision for the 'Abolition of Untouchability' is found in Article 17.

Final Answer: Article 17 deals with the abolition of untouchability.

Answer: (B)



Q17.

Solution**Concept:**

Circular seating arrangement problems require placing individuals relative to one another based on fixed starting points. Directional cues like "immediate left" or "between" help fix the positions.

Solution:

1. Draw a circle and mark six positions. 2. Let's place U at the top. P is to the immediate left of U (since they face the center, left is clockwise). 3. R is between P and S. Since P is already placed, R must be next to P, and S must be next to R. 4. Now the sequence is U, P, R, S in a clockwise direction. 5. Two spots remain for T and Q. T is to the immediate left of Q. This means in a clockwise direction, we must have Q followed by T. 6. The only two spots left are between S and U. Placing Q next to S and T next to Q completes the circle. 7. The full sequence clockwise is: U → P → R → S → Q → T. 8. To find who is opposite R: In a 6-person circle, the opposite of the 3rd person is the 6th person. 9. Starting from R (1), S (2), Q (3), T (4), U (5), P (6)... wait, let's look across the diameter. 10. R is at position 3. The person opposite is at $3 + 3 = 6$. Counting from R: 1(R), 2(S), 3(Q), 4(T). T is opposite R.

Final Answer: T is sitting opposite to R.

Answer: (C)



Q18.

Solution**Concept:**

The volume of a cylinder is the measure of the space occupied by it. It is calculated by multiplying the area of the circular base by the height of the cylinder. The formula is:

$$V = \pi r^2 h$$

where r is the radius and h is the height. Take $\pi = 22/7$.

Solution:

1. Given: Radius (r) = 3 cm. 2. Given: Height (h) = 14 cm. 3. Use the volume formula:

$$V = \frac{22}{7} \times (3)^2 \times 14$$

4. Simplify the expression:

$$V = \frac{22}{7} \times 9 \times 14$$

5. Divide 14 by 7:

$$V = 22 \times 9 \times 2$$

6. Calculate the final product:

$$V = 198 \times 2 = 396 \text{ cm}^3$$

Final Answer: The volume of the cylinder is 396 cm^3 .

Answer: (A)

Q19.

Solution**Concept:**

Most metals are solid at room temperature (except Mercury), and most non-metals are either solids or gases at room temperature. However, there is one specific non-metal that exists in a liquid state under standard conditions.

Solution:

1. Mercury (Hg) is a metal that is liquid at room temperature.
2. Chlorine (Cl) is a non-metal that is a gas at room temperature.
3. Phosphorus (P) is a non-metal that is a solid at room temperature.
4. Bromine (Br) is a halogen and a non-metal that is a reddish-brown liquid at room temperature.
5. The question specifically asks for a **non-metal** that is liquid.

Final Answer: Bromine is the non-metal that is liquid at room temperature.

Answer: (B)



Q20.

Solution**Concept:**

Calendar logic depends on the number of "odd days" in a year. An ordinary year (365 days) has 1 odd day ($365/7 = 52 \text{ weeks} + 1 \text{ day}$). A leap year (366 days) has 2 odd days ($366/7 = 52 \text{ weeks} + 2 \text{ days}$).

Solution:

1. The year 2024 is a leap year because it is divisible by 4. 2. A leap year contains 366 days. 3. To find the day on the same date of the next year, we calculate the number of odd days between 1st January 2024 and 1st January 2025. 4. Since 2024 is a leap year and includes 29th February, we add 2 odd days to the current day. 5. Given: 1st January 2024 was a Monday. 6. Monday + 2 days = Wednesday.

Final Answer: 1st January 2025 will be a Wednesday.

Answer: (B)



Q21.

Solution**Concept:**

Profit and loss involving Marked Price (MP) and Discount are solved by linking the Cost Price (CP) to the Selling Price (SP). Discount is always calculated on the MP, while Profit is calculated on the CP.

$$SP = MP - \text{Discount}$$
$$\text{Profit \%} = \left(\frac{SP - CP}{CP} \right) \times 100$$

Solution:

1. Let the Cost Price (CP) of the goods be ₹ 100. 2. The shopkeeper marks the goods 40% above the CP.

$$\text{Marked Price (MP)} = 100 + 40\% \text{ of } 100 = ₹ 140$$

3. A discount of 25% is allowed on the MP.

$$\text{Discount} = 25\% \text{ of } 140 = \frac{25}{100} \times 140 = \frac{1}{4} \times 140 = ₹ 35$$

4. Calculate the Selling Price (SP):

$$SP = MP - \text{Discount} = 140 - 35 = ₹ 105$$

5. Calculate the Profit:

$$\text{Profit} = SP - CP = 105 - 100 = ₹ 5$$

6. Profit percentage:

$$\text{Profit \%} = \left(\frac{5}{100} \right) \times 100 = 5\%$$

Final Answer: His profit percentage is 5%.

Answer: (A)



Q22.

Solution**Concept:**

The "odd one out" logic requires identifying a common characteristic shared by three items that the fourth one does not possess. This can be based on biological function, classification, or anatomical location.

Solution:

1. Analyze the given organs: Liver, Kidney, Pancreas, and Heart. 2. The Liver, Kidney, and Pancreas are part of the body's glandular or excretory/digestive systems. Specifically, the Liver and Pancreas are major digestive glands, and the Kidney is the primary excretory organ. 3. The Heart belongs to the circulatory system. 4. However, a more distinct classification in biology is the distinction between solid organs and those involved in secretion/filtration. 5. In most competitive exams like CUET, the distinction is made based on the "Glandular" nature. Liver, Kidney, and Pancreas are involved in filtration or secretion (endocrine/exocrine). 6. The Heart is a purely muscular pump. Therefore, it is the odd one out.

Final Answer: Heart is the odd one out.

Answer: (D)

Q23.

Solution**Concept:**

This specific coding pattern involves representing one letter of the original word with two letters in the coded format. Usually, the two code letters are the immediate predecessor and the immediate successor of the original letter in the alphabet.

Solution:

1. Analyze 'TRUTH' to 'SUQVTVSSGI': T is between S and U \implies (S, U) R is between Q and S \implies (Q, S) U is between T and V \implies (T, V) T is between S and U \implies (S, U) H is between G and I \implies (G, I) 2. Apply this "predecessor-successor" logic to 'FALSE': F \implies E, G A \implies Z, B (wrapping around the alphabet) L \implies K, M S \implies R, T E \implies D, F 3. Concatenating these pairs: EG + ZB + KM + RT + DF. 4. The resulting code is EGZBKMRTDF.

Final Answer: The code for FALSE is EGZBKMRTDF.

Answer: (B)



Q24.

Solution**Concept:**

The Indian National Congress (INC) held annual sessions to decide political strategies during the freedom struggle. Certain sessions are historically significant due to the specific leader who presided over them.

Solution:

1. Mahatma Gandhi was a major figure in the Indian independence movement, but he presided over the Indian National Congress session only once. 2. This historic session took place in 1924 in Belgaum (now in Karnataka). 3. Jawaharlal Nehru presided over several sessions, most notably the 1929 Lahore session. 4. Sardar Patel presided over the 1931 Karachi session. 5. Sarojini Naidu was the first Indian woman president, presiding over the 1925 Kanpur session. 6. Therefore, the President of the 1924 Belgaum session was Mahatma Gandhi.

Final Answer: Mahatma Gandhi presided over the 1924 Belgaum session.

Answer: (B)

Q25.

Solution**Concept:**

Consecutive even numbers differ by exactly 2. If the first even number is x , the subsequent numbers are $x + 2, x + 4$, and so on. Algebraic equations can be formed to find the value of x .

Solution:

1. Let the three consecutive even numbers be $x, x + 2$, and $x + 4$. 2. According to the problem, their sum is 78:

$$x + (x + 2) + (x + 4) = 78$$

3. Combine the terms:

$$3x + 6 = 78$$

4. Subtract 6 from both sides:

$$3x = 72$$

5. Divide by 3:

$$x = \frac{72}{3} = 24$$

6. The three numbers are: First = 24 Second = $24 + 2 = 26$ Third = $24 + 4 = 28$ 7. The largest number among them is 28.

Final Answer: The largest number is 28.

Answer: (C)



Q26.

Solution**Concept:**

The speed of sound depends on the elasticity and density of the medium. Sound travels through longitudinal waves that require particles to vibrate. In solids, particles are more tightly packed and the intermolecular bonds are stronger, allowing the wave to propagate faster.

Solution:

1. Assertion (A) states that sound travels faster in solids than in gases. This is a scientifically proven fact. For example, sound travels at approximately 343 m/s in air but at over 5000 m/s in steel. 2. Reason (R) states that the density of solids is very high compared to gases. While it is true that solids are generally denser than gases, a higher density actually tends to slow down the speed of sound if all other factors are equal (as $v \propto \sqrt{1/\rho}$). 3. The real reason sound is faster in solids is the high modulus of elasticity (stiffness) of solids, which outweighs the effect of density. 4. Therefore, both statements are true individually, but Reason (R) is not the correct explanation for Assertion (A).

Final Answer: Both A and R are true but R is NOT the correct explanation of A.

Answer: (B)

Q27.

Solution**Concept:**

Direction sense problems are solved by tracking displacement on a coordinate system. Standard directions are North (Up), South (Down), East (Right), and West (Left). Each turn (Left/Right) is a 90° change in direction.

Solution:

1. Start at point O. Move 5 km South. The man is now at (0, -5). 2. He turns right. While facing South, a right turn points toward the West. 3. He walks 3 km West. The man is now at (-3, -5). 4. He turns left. While facing West, a left turn points toward the South. 5. He walks 5 km South. The man is now at (-3, -10). 6. To find his direction from the starting point (0, 0), we look at the position (-3, -10). 7. Since the x-coordinate is negative (West) and the y-coordinate is negative (South), he is in the South-West direction.

Final Answer: He is in the South-West direction from the starting point.

Answer: (B)



Q28.

Solution**Concept:**

Ratio problems involving ages are solved by expressing the ages in terms of a variable x . By adding the number of years passed to these terms, a new equation is formed based on the future ratio.

Solution:

1. Let the present ages of A and B be $4x$ and $5x$ respectively. 2. After 6 years, their ages will be:
Age of A = $4x + 6$ Age of B = $5x + 6$ 3. According to the question, the new ratio is 6:7:

$$\frac{4x + 6}{5x + 6} = \frac{6}{7}$$

4. Cross-multiply to solve for x :

$$7(4x + 6) = 6(5x + 6)$$

$$28x + 42 = 30x + 36$$

5. Rearrange the terms:

$$42 - 36 = 30x - 28x$$

$$6 = 2x \implies x = 3$$

6. The present age of B is $5x = 5 \times 3 = 15$ years.

Final Answer: The present age of B is 15 years.

Answer: (B)

Q29.

Solution**Concept:**

This is a Current Affairs question regarding the leadership of India's premier space agency, ISRO (Indian Space Research Organisation). Leadership roles in such organizations are crucial for exam awareness.

Solution:

1. K. Sivan was the former Chairman of ISRO, known for leading the Chandrayaan-2 mission. 2. In January 2022, S. Somanath was appointed as the Chairman of ISRO, succeeding K. Sivan. 3. Under S. Somanath's leadership, ISRO successfully executed the Chandrayaan-3 and Aditya-L1 missions. 4. G. Satheesh Reddy is a former Chairman of DRDO, not ISRO. 5. As of the current academic cycle (2024-2026), S. Somanath remains the head of the organization.

Final Answer: S. Somanath is the current Chairman of ISRO.

Answer: (B)



Q30.

Solution**Concept:**

The properties of a square link its side (s), diagonal (d), and perimeter (P). The diagonal of a square creates a right-angled triangle with two sides, so by Pythagoras theorem:

$$d = s\sqrt{2}$$

The perimeter is given by $P = 4s$.

Solution:

1. Given the diagonal (d) = $10\sqrt{2}$ cm. 2. Using the formula $d = s\sqrt{2}$:

$$10\sqrt{2} = s\sqrt{2}$$

3. Dividing both sides by $\sqrt{2}$, we find the side:

$$s = 10 \text{ cm}$$

4. Now, calculate the perimeter (P):

$$P = 4 \times s$$

$$P = 4 \times 10 = 40 \text{ cm}$$

Final Answer: The perimeter of the square is 40 cm.

Answer: (A)

Q31.

Solution**Concept:**

The color of glass is determined by the addition of specific metal oxides during the manufacturing process. These oxides act as coloring agents by absorbing certain wavelengths of light.

Solution:

1. Cupric oxide (CuO) is typically used to impart a turquoise or red color to glass, depending on the furnace conditions. 2. Ferrous oxide (FeO) usually imparts a green or brownish tint to glass. 3. Nickel oxide (NiO) can produce violet or brownish-black glass depending on the glass base. 4. Cobalt oxide (CoO) is a very powerful coloring agent that imparts a deep, rich blue color to glass, often referred to as "Cobalt Blue." 5. Even in very small quantities, cobalt oxide is highly effective at producing this specific deep blue hue.

Final Answer: Cobalt oxide imparts deep blue color to glass.

Answer: (B)



Q32.

Solution**Concept:**

The G20 (Group of Twenty) is an international forum for the governments and central bank governors from 19 countries and the European Union. The presidency rotates annually among its members.

Solution:

1. In 2022, the G20 Summit was held in Bali, Indonesia. 2. In 2023, India held the G20 Presidency for the first time. 3. The 18th G20 Heads of State and Government Summit took place in New Delhi on September 9-10, 2023. 4. The theme for the Indian presidency was "Vasudhaiva Kutumbakam" or "One Earth, One Family, One Future." 5. Brazil hosted the summit in 2024 (Rio de Janeiro).

Final Answer: New Delhi hosted the G20 Summit in 2023.

Answer: (B)

Q33.

Solution**Concept:**

Identifying a series pattern often requires checking for arithmetic sequences, geometric sequences, or common mathematical powers such as squares (n^2) or cubes (n^3).

Solution:

1. Observe the given terms in the sequence: 1, 8, 27, 64, 125. 2. Analyze the relationship between the position of the term and its value:

$$1 = 1^3$$

$$8 = 2^3$$

$$27 = 3^3$$

$$64 = 4^3$$

$$125 = 5^3$$

3. The pattern is clearly the sequence of cubes of consecutive natural numbers starting from 1. 4. The next term in the sequence should be the cube of 6:

$$6^3 = 6 \times 6 \times 6 = 36 \times 6 = 216$$

Final Answer: The missing term is 216.

Answer: (B)



Q34.

Solution**Concept:**

Profit and Loss calculations are centralized around the Cost Price (CP). If an item is sold at a loss, the Selling Price (SP) is less than CP. If sold at a gain, SP is more than CP.

$$CP = \frac{SP \times 100}{100 - \text{Loss \%}}$$

$$\text{New SP} = \frac{CP \times (100 + \text{Gain \%})}{100}$$

Solution:

1. Given: Initial SP = ₹ 960 and Loss = 4%. 2. Calculate the Cost Price (CP):

$$CP = \frac{960 \times 100}{100 - 4} = \frac{960 \times 100}{96} \text{ wait, let's re-calculate: } 960/0.96 = 1000$$

$$CP = ₹ 1000$$

3. The person wants to gain 10%. 4. Calculate the required New Selling Price:

$$\text{New SP} = CP + 10\% \text{ of CP}$$

$$\text{New SP} = 1000 + 100 = ₹ 1100$$

Final Answer: The required selling price is ₹ 1100.

Answer: (A)

Q35.

Solution**Concept:**

The Richter scale is a mathematical device used to compare the size of earthquakes. It is based on the amplitude of waves recorded by seismographs.

Solution:

1. Statement I: "The Richter scale is used to measure the intensity of an earthquake." This is technically incorrect. The Richter scale measures the **magnitude** (the energy released), while the Mercalli scale measures the intensity (the damage caused). 2. Statement II: "The Richter scale is a linear scale." This is also incorrect. The Richter scale is a **logarithmic scale**. 3. On a logarithmic scale, an increase of 1 unit (e.g., from 5.0 to 6.0) indicates a 10-fold increase in the measured amplitude and approximately a 32-fold increase in energy release. 4. Therefore, both statements as phrased in the question are false.

Final Answer: Both I and II are false.

Answer: (B)



Q36.

Solution**Concept:**

To find the Least Common Multiple (LCM) of several fractions, we use the following standard formula:

$$\text{LCM of fractions} = \frac{\text{LCM of Numerators}}{\text{HCF of Denominators}}$$

This allows us to find a common value that is divisible by each of the fractional terms.

Solution:

1. The given fractions are $\frac{2}{3}$, $\frac{3}{5}$, $\frac{4}{7}$, and $\frac{9}{13}$. 2. First, identify the numerators: 2, 3, 4, and 9. 3. Calculate the LCM of the numerators (2, 3, 4, 9): - Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36... - 36 is divisible by 2, 3, 4, and 9. - So, $\text{LCM}(2, 3, 4, 9) = 36$. 4. Next, identify the denominators: 3, 5, 7, and 13. 5. Calculate the HCF of the denominators (3, 5, 7, 13): - Notice that 3, 5, 7, and 13 are all prime numbers. - The only common factor among different prime numbers is 1. - So, $\text{HCF}(3, 5, 7, 13) = 1$. 6. Apply the formula:

$$\text{LCM} = \frac{36}{1} = 36$$

Final Answer: The LCM of the given fractions is 36.

Answer: (A)

Q37.

Solution**Concept:**

Ranking and comparison problems are solved by creating a vertical or horizontal scale. We represent "taller" or "greater" on one side and "shorter" or "lesser" on the other, logically placing each individual based on the given constraints.

Solution:

1. Let's represent heights using the '>' symbol. 2. "A is shorter than B but taller than E" translates to: $B > A > E$. 3. "C is the tallest" translates to: C is at the top of the list. 4. "D is shorter than B and taller than A" translates to: $B > D > A$. 5. Now, combine these relations: - From (2) and (4), we know B is taller than both D and A, and both D and A are taller than E. - The order for these four is $B > D > A > E$. 6. Now include C (the tallest): - The final sequence is: $C > B > D > A > E$. 7. The question asks for the second tallest person. In the sequence C, B, D, A, E, the person in the second position is B.

Final Answer: B is the second tallest person.

Answer: (B)



Q38.

Solution**Concept:**

Environmental conservation initiatives in India often target specific endangered species. 'Project Tiger' is one of the most successful wildlife conservation ventures in the world, aimed at ensuring a viable population of Bengal tigers in their natural habitats.

Solution:

1. Project Tiger was initiated by the Government of India during the tenure of Prime Minister Indira Gandhi. 2. It was launched on April 1, 1973, at the Jim Corbett National Park in Uttarakhand. 3. The project started with 9 tiger reserves and has now expanded to over 50 reserves across the country. 4. The goal was to protect the tiger from extinction by preserving areas of biological importance as a national heritage. 5. Therefore, the year of launch is 1973.

Final Answer: Project Tiger was launched in 1973.

Answer: (B)

Q39.

Solution**Concept:**

An equilateral triangle is a triangle where all three sides are equal and all internal angles are 60° . The area of an equilateral triangle can be calculated directly using the side length (a) with the formula:

$$\text{Area} = \frac{\sqrt{3}}{4}a^2$$

Solution:

1. Given: Side (a) = 4 cm. 2. Substitute the value of a into the area formula:

$$\text{Area} = \frac{\sqrt{3}}{4} \times (4)^2$$

3. Square the side length:

$$\text{Area} = \frac{\sqrt{3}}{4} \times 16$$

4. Simplify the expression by dividing 16 by 4:

$$\text{Area} = \sqrt{3} \times 4$$

$$\text{Area} = 4\sqrt{3} \text{ cm}^2$$

Final Answer: The area of the equilateral triangle is $4\sqrt{3} \text{ cm}^2$.

Answer: (A)



Q40.

Solution**Concept:**

A standard chessboard is an 8×8 grid. To find the total number of rectangles (including squares) in an $n \times n$ grid, we use the combination formula. A rectangle is formed by choosing any 2 horizontal lines out of $(n + 1)$ and any 2 vertical lines out of $(n + 1)$.

$$\text{Total Rectangles} = \binom{n+1}{2} \times \binom{n+1}{2}$$

Solution:

1. A chessboard has 8 rows and 8 columns of squares. 2. This means there are 9 horizontal grid lines and 9 vertical grid lines. 3. To form a rectangle, we must select 2 horizontal lines from the 9 available:

$$\binom{9}{2} = \frac{9 \times 8}{2 \times 1} = 36$$

4. Similarly, we must select 2 vertical lines from the 9 available:

$$\binom{9}{2} = 36$$

5. The total number of rectangles is the product of these selections:

$$36 \times 36 = 1296$$

6. (Note: If the question asked only for squares, the answer would be 204. But for rectangles, it is 1296.)

Final Answer: There are 1296 rectangles in a chessboard.

Answer: (C)



Q41.

Solution**Concept:**

Hardness of water is caused by the presence of dissolved bicarbonates, chlorides, and sulfates of calcium and magnesium. Permanent hardness is specifically caused by chlorides and sulfates, which cannot be removed by simple boiling. It requires chemical treatment to precipitate the minerals.

Solution:

1. Permanent hardness is caused by salts like $CaCl_2$, $MgCl_2$, $CaSO_4$, and $MgSO_4$. 2. Washing soda (Sodium Carbonate, Na_2CO_3) is used to remove both temporary and permanent hardness. 3. When washing soda is added to hard water, it reacts with the soluble calcium and magnesium sulfates and chlorides to form insoluble carbonates. 4. For example: $CaSO_4 + Na_2CO_3 \rightarrow CaCO_3 \downarrow + Na_2SO_4$. 5. The insoluble $CaCO_3$ precipitates out, leaving the water "soft."

Final Answer: Washing Soda is used to remove permanent hardness of water.

Answer: (B)

Q42.

Solution**Concept:**

Exponential equations can be solved by making the bases on both sides of the equation equal. Once the bases are the same, the exponents can be equated to form a system of linear equations.

Solution:

1. Given the first equation: $3^{(x-y)} = 27$. 2. Since $27 = 3^3$, we can write: $3^{(x-y)} = 3^3 \implies x - y = 3$ (Equation 1). 3. Given the second equation: $3^{(x+y)} = 243$. 4. Since $243 = 3^5$, we can write: $3^{(x+y)} = 3^5 \implies x + y = 5$ (Equation 2). 5. Now, solve the system of linear equations by adding Equation 1 and Equation 2:

$$(x - y) + (x + y) = 3 + 5$$

$$2x = 8 \implies x = 4$$

6. (Optional: Substituting $x = 4$ into Equation 2 gives $4 + y = 5 \implies y = 1$).

Final Answer: The value of x is 4.

Answer: (B)



Q43.

Solution**Concept:**

SAARC (South Asian Association for Regional Cooperation) is a regional intergovernmental organization and geopolitical union of states in South Asia. Awareness of member nations is a common topic in General Knowledge.

Solution:

1. SAARC was established in 1985 in Dhaka. 2. Its current 8 member states are: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. 3. Myanmar and China hold "observer" status but are not full members of SAARC. 4. Myanmar is a member of ASEAN (Association of Southeast Asian Nations), not SAARC. 5. Therefore, among the choices provided, Myanmar is the one that is not a member.

Final Answer: Myanmar is not a member of SAARC.

Answer: (C)

Q44.

Solution**Concept:**

When a wheel rotates, the distance covered in one full revolution is equal to the circumference of the wheel. The total distance covered is the product of the number of revolutions and the circumference.

$$\text{Total Distance} = n \times (2\pi r)$$

Solution:

1. Given: Total Distance = 88 km = 88,000 meters. 2. Given: Number of revolutions (n) = 1000. 3. Let the radius be r . 4. Calculate the distance covered in one revolution (circumference):

$$\text{Circumference} = \frac{88000}{1000} = 88 \text{ meters}$$

5. Use the circumference formula:

$$2\pi r = 88$$

$$2 \times \frac{22}{7} \times r = 88$$

6. Solve for r :

$$\frac{44}{7} \times r = 88$$

$$r = \frac{88 \times 7}{44} = 2 \times 7 = 14 \text{ meters}$$

Final Answer: The radius of the wheel is 14 m.

Answer: (A)



Q45.

Solution**Concept:**

In ranking problems, the number of people between two individuals can be found by determining their positions from the same end. Alternatively, use the total count formula:

$$\text{Between} = \text{Total} - (\text{Position from Left} + \text{Position from Right})$$

(Note: This formula applies when there is no overlap between the two positions).

Solution:

1. Given: Total students = 40. 2. M's position from the left = 14. 3. R's position from the right = 11. 4. Check for overlap: Add the positions from both ends ($14 + 11 = 25$). 5. Since 25 is less than the total (40), there is no overlap. 6. Number of students between M and R:

$$\text{Students Between} = \text{Total} - (\text{Left Position} + \text{Right Position})$$

$$\text{Students Between} = 40 - (14 + 11)$$

$$\text{Students Between} = 40 - 25 = 15$$

Final Answer: There are 15 students between them.

Answer: (A)

Q46.

Solution**Concept:**

Sports trophies and cups are often named after prominent figures who contributed to the game's development. In India, domestic cricket tournaments are essential for scouting talent for the national team.

Solution:

1. The Duleep Trophy is a prestigious first-class cricket tournament played in India. 2. It is named after Kumar Shri Duleepsinhji of Nawanager (also known as 'Duleep'). 3. Originally, the tournament was contested by teams representing geographical zones of India (North, South, East, West, and Central). 4. Other famous cricket trophies in India include the Ranji Trophy, Deodhar Trophy, and Irani Cup. 5. Therefore, the Duleep Trophy is associated with Cricket.

Final Answer: Duleep Trophy is associated with Cricket.

Answer: (C)



Q47.

Solution**Concept:**

To solve nested radical (square root) expressions, we always start from the innermost square root and work our way outward. We simplify one level at a time by finding the square root and adding it to the next number in the sequence.

Solution:

1. Start with the innermost root: $\sqrt{225} = 15$. 2. Substitute this back: $\sqrt{154 + 15} = \sqrt{169} = 13$. 3. Substitute this into the next level: $\sqrt{108 + 13} = \sqrt{121} = 11$. 4. Substitute this into the next level: $\sqrt{25 + 11} = \sqrt{36} = 6$. 5. Finally, substitute into the outermost root: $\sqrt{10 + 6} = \sqrt{16} = 4$.

Final Answer: The final value of the expression is 4.

Answer: (A)

Q48.

Solution**Concept:**

When a larger cube of side n is painted and cut into unit cubes ($1 \times 1 \times 1$), the number of small cubes with no faces painted is equivalent to the volume of the inner "core" cube.

$$\text{Cubes with 0 faces painted} = (n - 2)^3$$

Solution:

1. The side of the large cube (n) is 4 cm. 2. It is cut into unit cubes of 1 cm, so the number of segments along each edge is 4. 3. The cubes with at least one face painted are those on the outer surface. 4. The inner cubes, which are not visible from the outside, have no paint on them. 5. These inner cubes form a smaller cube within the large cube. 6. The dimensions of this inner cube are $(n - 2) \times (n - 2) \times (n - 2)$. 7. For $n = 4$:

$$\text{Inner side} = 4 - 2 = 2 \text{ cm}$$

$$\text{Number of cubes} = 2^3 = 8$$

Final Answer: There are 8 cubes with no face painted.

Answer: (A)



Q49.

Solution**Concept:**

International environmental treaties are designed to address global issues like climate change and ozone depletion. The Kyoto Protocol specifically targeted the reduction of anthropogenic carbon dioxide emissions.

Solution:

1. The Kyoto Protocol was adopted in 1997 in Kyoto, Japan, and entered into force in 2005. 2. It is an international treaty that commits state parties to reduce greenhouse gas emissions. 3. It was based on the scientific consensus that global warming is occurring and it is extremely likely that human-made CO_2 emissions have predominantly caused it. 4. Note: The Montreal Protocol is related to Ozone depletion, whereas Kyoto is related to Greenhouse gases (Climate Change).

Final Answer: Kyoto Protocol is related to greenhouse gases.

Answer: (B)

Q50.

Solution**Concept:**

The relationship between Income, Expenditure, and Savings is given by:

$$\text{Income} - \text{Expenditure} = \text{Savings}$$

When the ratios for income and expenditure are known, we can use a variable to set up algebraic equations.

Solution:

1. Let the incomes of A and B be $3x$ and $2x$ respectively. 2. Let their expenditures be $5y$ and $3y$ respectively. 3. Both save ₹ 1000 each. Equation for A: $3x - 5y = 1000$ (Eq. 1) Equation for B: $2x - 3y = 1000$ (Eq. 2) 4. To eliminate y , multiply Eq. 1 by 3 and Eq. 2 by 5:

$$9x - 15y = 3000$$

$$10x - 15y = 5000$$

5. Subtract the first new equation from the second:

$$(10x - 9x) + (-15y - (-15y)) = 5000 - 3000$$

$$x = 2000$$

6. A's income is $3x = 3 \times 2000 = ₹ 6000$.

Final Answer: A's income is ₹ 6000.

Answer: (C)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	B	3	A	4	C	5	C
6	B	7	B	8	B	9	B	10	C
11	B	12	A	13	A	14	A	15	B
16	B	17	C	18	A	19	B	20	B
21	A	22	D	23	B	24	B	25	C
26	B	27	B	28	B	29	B	30	A
31	B	32	B	33	B	34	A	35	B
36	A	37	B	38	B	39	A	40	C
41	B	42	B	43	C	44	A	45	A
46	C	47	A	48	A	49	B	50	C

