CUET-UG General Aptitude Test Sample Paper-19

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

(A) 5% Profit

(B) 5% Loss

(C) 10% Profit

(D) No Profit No Loss

Q2. A can do a work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is:

(A) 1/4

(B) 1/10

(C) 7/15

(D) 8/15

Q3. The difference between simple and compound interest on Rs. 6000 for 2 years at 10% per annum is:

(A) Rs. 60

(B) Rs. 120

(C) Rs. 6

(D) Rs. 600

Q4. A train 140m long is running at 60 km/hr. In how much time will it pass a platform 260m long?

(A) 20 sec

(B) 24 sec

(C) 28 sec

(D) 30 sec

Q5. If 20% of A = 50% of B, then what percentage of A is B?

(A) 40%

(B) 250%

(C) 15%

(D) 80%

Q6. If $a : b = 2 : 3$ and $b : c = 4 : 5$, find $a : b : c$.

(A) 8:12:15

(B) 4:6:10

(C) 2:3:5

(D) 8:15:20

Q7. 12 men can complete a piece of work in 36 days. In how many days will 18 men finish the same work?

(A) 18

(B) 24

(C) 20

(D) 28

Q8. The average age of 30 students is 15 years. If the teacher's age is included, the average increases by 1. The teacher's age is:

(A) 31

(B) 45

(C) 46

(D) 50

Q9. By selling an article for Rs. 720, a man loses 10%. At what price should he sell it to gain 20%?

(A) Rs. 900

(B) Rs. 960

(C) Rs. 1000

(D) Rs. 1080

Q10. In what ratio must tea at Rs. 62 per kg be mixed with tea at Rs. 72 per kg so that the mixture must be worth Rs. 64.50 per kg?

(A) 3:1

(B) 3:2

(C) 4:3

(D) 5:3

Q11. If the radius of a circle is increased by 50%, its area is increased by:

(A) 100%

(B) 125%

(C) 150%

(D) 200%

Q12. At what rate of compound interest per annum will a sum of Rs. 1200 become Rs. 1348.32 in 2 years?

(A) 6%

(B) 6.5%

(C) 7%

(D) 7.5%

Q13. If the number 481*673 is completely divisible by 9, then the smallest whole number in place of * will be:

(A) 2

(B) 5

(C) 6

(D) 7

Q14. The HCF of two numbers is 11 and their LCM is 693. If one number is 77, find the other.

(A) 66

(B) 99

(C) 121

(D) 88

Q15. Value of $\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}$ is:

(A) 4

(B) 6

(C) 8

(D) 10

Q16. Which is the largest among $2^{1/2}, 3^{1/3}, 4^{1/4}$?

(A) $2^{1/2}$

(B) $3^{1/3}$

(C) $4^{1/4}$

(D) All are equal

Q17. Arrange in descending order: 3/5, 7/9, 11/13.

(A) 3/5, 7/9, 11/13

(B) 11/13, 7/9, 3/5

(C) 7/9, 11/13, 3/5

(D) 11/13, 3/5, 7/9

Q18. If $x + 1/x = 5$, then $x^2 + 1/x^2$ is:

(A) 25

(B) 27

(C) 23

(D) 20

Q19. If the angles of a triangle are in the ratio 2:3:5, the triangle is:

(A) Acute

(B) Obtuse

(C) Right-angled

(D) Isosceles

Q20. The length of a chord which is at a distance of 5cm from the center of a circle of radius 13cm is:

(A) 12cm

(B) 24cm

(C) 10cm

(D) 18cm

Q21. Solve for x and y: $2x + 3y = 8$ and $3x - y = 1$.

(A) (1, 2)

(B) (2, 1)

(C) (1, 1)

(D) (2, 2)

Q22. The perimeter of a semi-circular protector is 36cm. Its diameter is:

(A) 7cm

(B) 14cm

(C) 21cm

(D) 28cm

Q23. If the radius of a sphere is doubled, how many times does its volume become?

(A) 2 times

(B) 4 times

(C) 8 times

(D) 16 times

Q24. A wire is in the form of a circle of radius 42cm. It is bent into a square. Side of the square is:

(A) 66cm

(B) 44cm

(C) 132cm

(D) 33cm

Q25. If "GOLD" is coded as "IQLF", how is "WIND" coded?

(A) YKPF

(B) XJOE

(C) VHMC

(D) BKPF

Q26. Pointing to a photograph, a man said, "I have no brother or sister but that man's father is my father's son." Whose photograph was it?

(A) His own

(B) His son's

(C) His father's

(D) His nephew's

Q27. A man walks 5km East, then turns right and walks 4km, then turns left and walks 5km. Which direction is he facing now?

(A) North

(B) South

(C) East

(D) West

Q28. Series: 2, 6, 12, 20, 30, ?

(A) 40

(B) 42

(C) 44

(D) 46

Q29. Moon : Satellite :: Earth : ?

(A) Sun

(B) Planet

(C) Solar System

(D) Asteroid

Q30. Find the odd one out:

(A) Mercury

(B) Venus

(C) Moon

(D) Mars

Q31. Series: AZ, CX, EV, ?

(A) GT

(B) GS

(C) HT

(D) IR

Q32. In a code language, 123 means 'hot filtered coffee', 356 means 'very hot day'. Which digit means 'hot'?

(A) 1

(B) 2

(C) 3

(D) 5

Q33. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then, how is A related to D?

(A) Grandfather

(B) Grandmother

(C) Daughter

(D) Granddaughter

Q34. Statements: All rain are water. Some water are blue.
Conclusions: I. Some rain are blue. II. Some blue are water.

(A) Only I follows

(B) Only II follows

(C) Both I & II follow

(D) Neither follows

Q35. P, Q, R, S, T are sitting in a row facing North. R is to the immediate left of S. T is to the immediate right of Q. P is at one end. Who is in the middle if S is next to P?

(A) R

(B) S

(C) T

(D) Q

Q36. In a class of 45, Neha's rank is 15th from the top. What is her rank from the bottom?

(A) 30

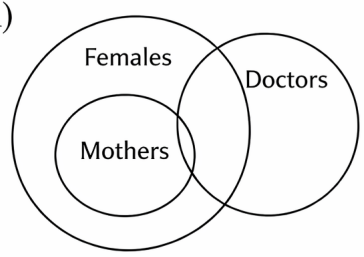
(B) 31

(C) 29

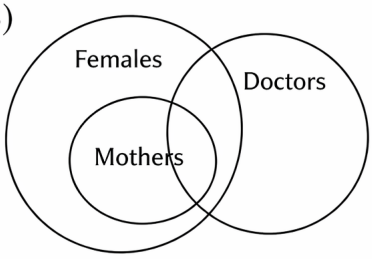
(D) 32

Q37. Which of the following Venn diagrams correctly represents the relationship between: Doctors, Females, and Mothers? (Note: All mothers are females, and some doctors can be either females or mothers).

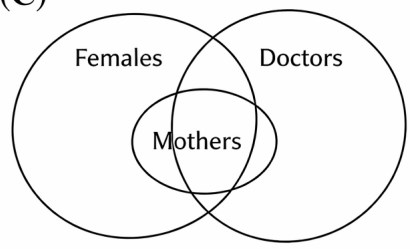
(A)



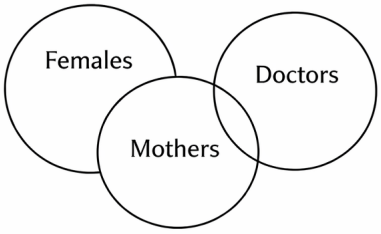
(B)



(C)



(D)



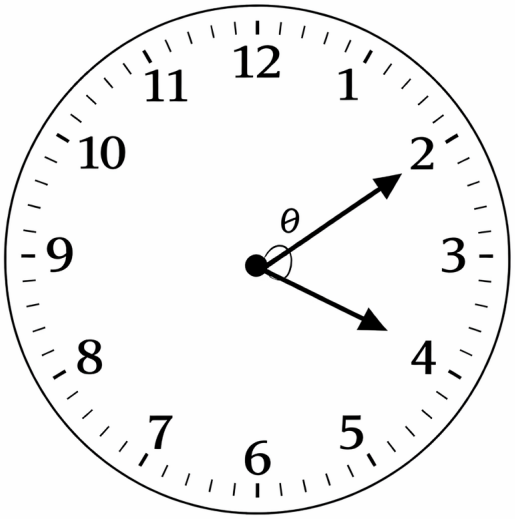
(A) A

(B) B

(C) C

(D) D

Q38. At what angle are the hands of a clock inclined at 4:20?



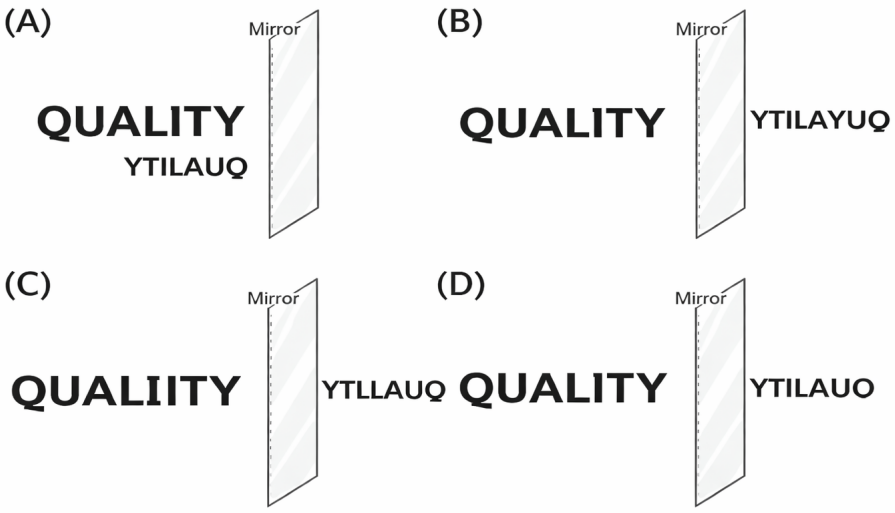
(A) 0°

(B) 10°

(C) 20°

(D) 25°

Q39. Find the mirror image of "QUALITY" when the mirror is placed to the right of the word:



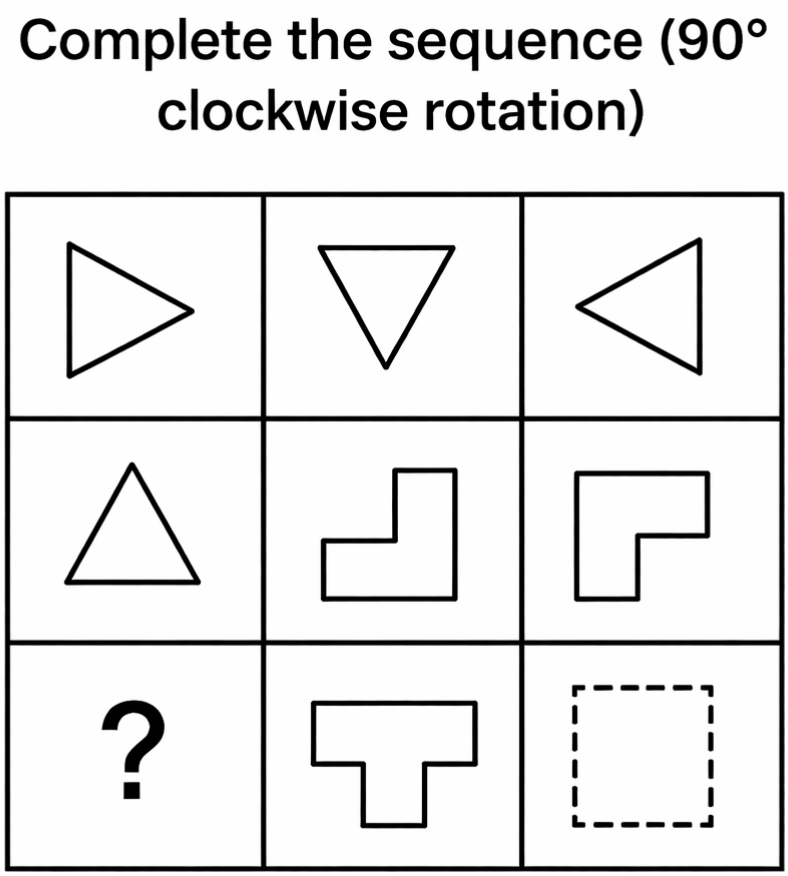
(A) A

(B) B

(C) C

(D) D

Q40. Which option should replace the missing box (?) in the following series?



(A) ⊤

(B) ⊣

(C) ⊢

(D) ⊥

Q41. Who presided over the G20 Summit held in India in 2023?

(A) Narendra Modi

(B) Amit Shah

(C) S. Jaishankar

(D) Draupadi Murmu

Q42. Who won the ICC Men's Cricket World Cup 2023?

(A) India

(B) Australia

(C) South Africa

(D) England

Q43. The "Quit India Movement" was launched in which year?

(A) 1920

(B) 1930

(C) 1942

(D) 1947

Q44. Which Article of the Indian Constitution deals with the "Right to Equality"?

(A) Art 14

(B) Art 17

(C) Art 21

(D) Art 32

Q45. Which river is known as the "Sorrow of Bihar"?

(A) Ganga

(B) Kosi

(C) Yamuna

(D) Son

Q46. Who was awarded the Bharat Ratna in 2024 (Posthumous)?

(A) Karpoori Thakur

(B) Ratan Tata

(C) Amitabh Bachchan

(D) MS Dhoni

Q47. The fundamental duties were added to the constitution by which amendment?

(A) 42nd

(B) 44th

(C) 86th

(D) 73rd

Q48. Where is the headquarters of the World Health Organization (WHO) located?

(A) New York

(B) Geneva

(C) Paris

(D) Rome

Q49. Who was the first Governor-General of independent India?

(A) C. Rajagopalachari

(B) Lord Mountbatten

(C) Dr. Rajendra Prasad

(D) JL Nehru

Q50. Which vitamin is also known as "Ascorbic Acid"?

(A) Vit A

(B) Vit B12

(C) Vit C

(D) Vit D

Detailed Solutions

Q1.

Solution

Concept: This problem involves successive percentage changes: a markup followed by a discount. We calculate the final Selling Price (SP) relative to the initial Cost Price (CP) to determine the overall profit or loss percentage.

Solution: 1. **Assume a Base Value:** Let the Cost Price (CP) be 100.

2. **Calculate the Marked Price (MP):** The shopkeeper marks the goods 40% above CP. * $MP = CP + 40\%$ of CP * $MP = 100 + 40 = 140$

3. **Calculate the Selling Price (SP):** A discount of 25% is allowed on the MP. * Discount = 25% of 140 = $\frac{1}{4} \times 140 = 35$ * $SP = MP -$ Discount $= 140 - 35 = 105$

4. **Determine the Profit or Loss Percentage:** Compare SP and CP. * Profit $= SP - CP = 105 - 100 = 5$ * Profit % = $\frac{\text{Profit}}{CP} \times 100 = \frac{5}{100} \times 100 = 5\%$

Final Answer: 5% Profit

Answer: (A)

Q2.

Solution

Concept: This is a Time and Work problem. We calculate the individual work rates (work done per day), find the combined work rate for both individuals, and then subtract the work completed from the total work (represented as 1) to find the remaining fraction.

Solution: 1. **Determine Daily Work Rates:** * Work done by A in 1 day = $\frac{1}{15}$ * Work done by B in 1 day = $\frac{1}{20}$

2. **Calculate Combined Daily Work Rate:** * Work done by $(A + B)$ in 1 day = $\frac{1}{15} + \frac{1}{20}$ * Find the LCM of 15 and 20, which is 60: * $(A + B)$'s 1 day work = $\frac{4+3}{60} = \frac{7}{60}$

3. **Calculate Work Done in 4 Days:** * Work completed in 4 days = $4 \times \frac{7}{60} = \frac{7}{15}$

4. **Calculate Remaining Work:** * Total work is represented as 1. * Remaining work = $1 - \frac{7}{15}$ * Remaining work = $\frac{15-7}{15} = \frac{8}{15}$

Final Answer: 8/15

Answer: (D)

Q3.

Solution

Concept: This problem deals with the difference between Compound Interest (CI) and Simple Interest (SI). For a period of 2 years, the difference arises because compound interest calculates interest on the interest earned in the first year.

Solution: 1. **Identify Given Values:** * Principal (P) = Rs. 6000 * Time (n) = 2 years * Rate (R) = 10% per annum

2. **Method 1: Using the Standard Formula for 2 Years:** * Difference = $P\left(\frac{R}{100}\right)^2$ * Difference = $6000 \times \left(\frac{10}{100}\right)^2$ * Difference = $6000 \times \left(\frac{1}{10}\right)^2$ * Difference = $6000 \times \frac{1}{100} = 60$

3. **Method 2: Step-by-Step Calculation:** * $SI = \frac{P \times R \times T}{100} = \frac{6000 \times 10 \times 2}{100} = 1200$ * $CI = P\left[\left(1+\frac{R}{100}\right)^n - 1\right] = 6000\left[(1.1)^2 - 1\right]$ * $CI = 6000[1.21 - 1] = 6000 \times 0.21 = 1260$ * Difference = $1260 - 1200 = 60$

Final Answer: Rs. 60

Answer: (A)

Q4.

Solution

Concept: When a train passes a platform, the total distance covered is the sum of the length of the train and the length of the platform. We must also ensure that speed and distance units are consistent (converting km/hr to m/s).

Solution: 1. **Calculate Total Distance:** * Total Distance = Length of Train + Length of Platform * Total Distance = 140m + 260m = 400m

2. **Convert Speed to m/s:** * Speed = 60 km/hr * To convert to m/s, multiply by $\frac{5}{18}$: * Speed = $60 \times \frac{5}{18} = \frac{10 \times 5}{3} = \frac{50}{3}$ m/s

3. **Calculate Time:** * Time = $\frac{\text{Distance}}{\text{Speed}}$ * Time = $\frac{400}{50/3} = 400 \times \frac{3}{50}$ * Time = $8 \times 3 = 24$ seconds

Final Answer: 24 sec

Answer: (B)

Q5.

Solution

Concept: This problem involves expressing the relationship between two variables using percentages. We first establish an equation based on the given condition to find the ratio between the variables, and then calculate the required percentage.

Solution: 1. **Set up the Equation:** * Given: 20% of A = 50% of B * $\frac{20}{100} \times A = \frac{50}{100} \times B$

2. **Simplify the Relationship:** * $20A = 50B$ * $2A = 5B$ * $B = \frac{2}{5}A$

3. **Calculate B as a Percentage of A:** * Percentage = $\left(\frac{B}{A}\right) \times 100$ * Percentage = $\left(\frac{2}{5}\right) \times 100$ * Percentage = $2 \times 20 = 40\%$

Final Answer: 40%

Answer: (A)

Q6.

Solution

Concept: To combine two separate ratios ($a : b$ and $b : c$) into a single continuous ratio ($a : b : c$), we must make the common term (b) equal in both ratios by multiplying them by suitable constants.

Solution: 1. **Identify the Ratios:** * $a : b = 2 : 3$ * $b : c = 4 : 5$

2. **Equate the Common Term (b):** * The value of b is 3 in the first ratio and 4 in the second. * The LCM of 3 and 4 is 12. * Multiply the first ratio (2 : 3) by 4: $a : b = 8 : 12$ * Multiply the second ratio (4 : 5) by 3: $b : c = 12 : 15$

3. **Combine the Ratios:** * Since b is now 12 in both cases: * $a : b : c = 8 : 12 : 15$

Final Answer: 8:12:15

Answer: (A)

Q7.

Solution

Concept: This problem is based on the concept of inverse proportion or the $M_1D_1 = M_2D_2$ formula. As the number of men increases, the time taken to complete the same work decreases proportionately.

Solution: 1. **Identify Given Values:** * M_1 (Initial Men) = 12 * D_1 (Initial Days) = 36 * M_2 (New Men) = 18 * D_2 (New Days) =?

2. **Apply the Formula:** * $M_1 \times D_1 = M_2 \times D_2$ * $12 \times 36 = 18 \times D_2$

3. **Solve for D_2:** * $D_2 = \frac{12 \times 36}{18}$ * $D_2 = 12 \times 2 = 24$

Final Answer: 24

Answer: (B)

Q8.

Solution

Concept: The average is the sum of all values divided by the number of values. When a new person is added, the total sum increases by that person's value. We compare the total sum before and after the teacher joins.

Solution: 1. **Calculate Initial Total Age:** * Number of students = 30 * Average age = 15 * Total age of students = $30 \times 15 = 450$ years

2. **Calculate New Total Age:** * Total people (students + teacher) = 31 * New average = 15 + 1 = 16 * New total age = $31 \times 16 = 496$ years

3. **Find the Teacher's Age:** * Teacher's age = New Total − Initial Total * Teacher's age = 496 − 450 = 46 years

Final Answer: 46

Answer: (C)

Q9.

Solution

Concept: The selling price is determined by the cost price and the profit or loss percentage. To find the new selling price for a specific gain, we first determine the Cost Price (CP) from the initial selling condition and then apply the desired profit percentage.

Solution: 1. **Find the Cost Price (CP):** * Selling Price (SP_1) = Rs. 720, Loss = 10% * $CP = \frac{SP_1 \times 100}{100 - \text{Loss}\%}$ * $CP = \frac{720 \times 100}{90} = 8 \times 100 = 800$

2. **Calculate New Selling Price (SP_2) for 20% Gain:** * $CP = 800$, Gain = 20% * $SP_2 = CP \times \left(\frac{100 + \text{Gain}\%}{100}\right)$ * $SP_2 = 800 \times \frac{120}{100}$ * $SP_2 = 8 \times 120 = 960$

Final Answer: Rs. 960

Answer: (B)

Q10.

Solution

Concept: This problem is best solved using the Rule of Alligation. It states that when two ingredients are mixed, the ratio of the quantities is inversely proportional to the difference between their individual prices and the mean price of the mixture.

Solution: 1. **Identify the Prices:** * Cheaper price (C) = Rs. 62 * Dearer price (D) = Rs. 72 * Mean price (M) = Rs. 64.50

2. **Apply the Alligation Formula:** * Ratio = $\frac{\text{Quantity of Cheaper}}{\text{Quantity of Dearer}} = \frac{D - M}{M - C}$

3. **Calculate the Differences:** * $D - M = 72 - 64.50 = 7.50$ * $M - C = 64.50 - 62 = 2.50$

4. **Determine the Ratio:** * Ratio = $\frac{7.50}{2.50} = \frac{75}{25} = \frac{3}{1}$

Final Answer: 3:1

Answer: (A)

Q11.

Solution

Concept: The area of a circle is proportional to the square of its radius ($A = \pi r^2$). When the radius increases, the area increases by the square of the scale factor. This can also be solved using the successive percentage change formula: $x + y + \frac{xy}{100}$.

Solution: 1. **Identify the Change:** The radius increases by 50%. Let the initial radius be r. * New radius (R) = $r + 0.5r = 1.5r$

2. **Calculate the Area Change:** * Initial Area (A_1) = πr^2 * New Area (A_2) = $\pi(1.5r)^2 = 2.25\pi r^2$

3. **Calculate Percentage Increase:** * Increase in Area = $A_2 - A_1 = 2.25\pi r^2 - 1\pi r^2 = 1.25\pi r^2$ * Percentage Increase = $\frac{1.25\pi r^2}{\pi r^2} \times 100 = 125\%$

4. **Alternative Method (Formula):** * Successive Change = $50+50+\frac{50\times50}{100} = 100+25 = 125\%$

Final Answer: 125%

Answer: (B)

Q12.

Solution

Concept: Compound interest follows the formula $A = P(1 + \frac{R}{100})^n$. To find the rate, we substitute the given Amount, Principal, and Time into the formula and solve for R.

Solution: 1. **Identify Given Values:** * Principal (P) = Rs. 1200 * Amount (A) = Rs. 1348.32 * Time (n) = 2 years

2. **Set up the Equation:** * $1348.32 = 1200\left(1 + \frac{R}{100}\right)^2$ * $\frac{1348.32}{1200} = \left(1 + \frac{R}{100}\right)^2$ * $1.1236 = \left(1 + \frac{R}{100}\right)^2$

3. **Solve for R:** * Taking the square root of both sides: * $\sqrt{1.1236} = 1 + \frac{R}{100}$ * $1.06 = 1 + \frac{R}{100}$ * $0.06 = \frac{R}{100}$ * $R = 6\%$

Final Answer: 6%

Answer: (A)

Q13.

Solution

Concept: A number is divisible by 9 if the sum of its digits is divisible by 9. We calculate the sum of the known digits and find the smallest value for the missing digit ($*$) that makes the total sum a multiple of 9.

Solution: 1. **Sum the Known Digits:** * Number: $481*673$ * Sum = $4+8+1+*+6+7+3$ * Sum = $29+*$

2. **Find the Smallest Multiplier of 9:** * The next multiple of 9 greater than 29 is 36. * $29 + * = 36$ * $* = 36 - 29 = 7$

3. **Verify:** * If $* = 7$, the sum is 36, which is divisible by 9.

Final Answer: 7

Answer: (D)

Q14.

Solution

Concept: There is a fundamental relationship between two numbers and their HCF and LCM: the product of the two numbers is equal to the product of their HCF and LCM ($\text{Num}_1 \times \text{Num}_2 = \text{HCF} \times \text{LCM}$).

Solution: 1. **Identify Given Values:** * HCF = 11 * LCM = 693 * First Number(A) = 77 * Second Number(B) =?

2. **Apply the Formula:** * $A \times B = \text{HCF} \times \text{LCM}$ * $77 \times B = 11 \times 693$

3. **Solve for B:** * $B = \frac{11 \times 693}{77}$ * $B = \frac{693}{7}$ * $B = 99$

Final Answer: 99

Answer: (B)

Q15.

Solution

Concept: To simplify nested square roots, we solve from the innermost radical outward. Each step involves finding a perfect square root and adding it to the preceding number.

Solution: 1. **Innermost Root:** $\sqrt{225} = 15$ * Expression: $\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + 15}}}}$

2. **Next Step:** $\sqrt{154 + 15} = \sqrt{169} = 13$ * Expression: $\sqrt{10 + \sqrt{25 + \sqrt{108 + 13}}}$

3. **Next Step:** $\sqrt{108 + 13} = \sqrt{121} = 11$ * Expression: $\sqrt{10 + \sqrt{25 + 11}}$

4. **Next Step:** $\sqrt{25 + 11} = \sqrt{36} = 6$ * Expression: $\sqrt{10 + 6}$

5. **Final Step:** $\sqrt{16} = 4$

Final Answer: 4

Answer: (A)

Q16.

Solution

Concept: To compare surds with different indices, we convert the fractional exponents to a common denominator. This allows us to compare the bases raised to equivalent powers.

Solution:

(a) **Identify the powers:** The powers are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$. The LCM of $2, 3, 4$ is 12.

(b) **Rewrite with a common denominator:**

$$2^{1/2} = 2^{6/12} = (2^6)^{1/12} = 64^{1/12}$$

$$3^{1/3} = 3^{4/12} = (3^4)^{1/12} = 81^{1/12}$$

$$4^{1/4} = 4^{3/12} = (4^3)^{1/12} = 64^{1/12}$$

(c) **Compare the values:** Since the exponents are now the same, compare bases:

$$64,\ 81,\ 64$$

Clearly, 81 is the largest.

So,

$3^{1/3}$ is the greatest.

Final Answer: $3^{1/3}$

Answer: (B)

Q17.

Solution

Concept: To arrange fractions, we can either convert them to decimals or find a common denominator. However, for fractions where the difference between numerator and denominator is constant (here, $5 - 3 = 2, 9 - 7 = 2, 13 - 11 = 2$), the fraction with the largest numbers is the largest.

Solution: 1. **Check the Difference:** * $\frac{3}{5} \rightarrow 5 - 3 = 2$ * $\frac{7}{9} \rightarrow 9 - 7 = 2$ * $\frac{11}{13} \rightarrow 13 - 11 = 2$

2. **Apply the Rule:** When the difference between the numerator and denominator is the same for proper fractions, the fraction with the largest values is the greatest, and the one with the smallest values is the least. * $11/13 > 7/9 > 3/5$

3. **Verification (Decimal Method):** * $3/5 = 0.60$ * $7/9 \approx 0.77$ * $11/13 \approx 0.84$

4. **Descending Order:** $11/13, 7/9, 3/5$.

Final Answer: 11/13, 7/9, 3/5

Answer: (B)

Q18.

Solution

Concept: This problem utilizes the algebraic identity $(a+b)^2 = a^2 + b^2 + 2ab$. By squaring the given equation, we can isolate the required terms.

Solution: 1. **Identify the Given Equation:** * $x + \frac{1}{x} = 5$

2. **Square Both Sides:** * $\left(x + \frac{1}{x}\right)^2 = 5^2$ * $x^2 + \left(\frac{1}{x}\right)^2 + 2(x)\left(\frac{1}{x}\right) = 25$

3. **Simplify and Solve:** * $x^2 + \frac{1}{x^2} + 2 = 25$ * $x^2 + \frac{1}{x^2} = 25 - 2$ * $x^2 + \frac{1}{x^2} = 23$

Final Answer: 23

Answer: (C)

Q19.

Solution

Concept: The sum of all interior angles of a triangle is always $180°$. We use the given ratio to find the individual angles and then classify the triangle based on its largest angle.

Solution: 1. **Set up the Equation:** Let the angles be $2k$, $3k$, and $5k$. * $2k + 3k + 5k = 180°$ * $10k = 180°$ * $k = 18°$

2. **Calculate the Angles:** * First angle $= 2 \times 18 = 36°$ * Second angle $= 3 \times 18 = 54°$ * Third angle $= 5 \times 18 = 90°$

3. **Classify the Triangle:** Since one of the angles is exactly $90°$, it is a right-angled triangle.

Final Answer: Right-angled

Answer: (C)

Q20.

Solution

Concept: A perpendicular drawn from the center of a circle to a chord bisects the chord. This creates a right-angled triangle where the radius is the hypotenuse, the distance from the center is one side, and half the chord length is the other side.

Solution: 1. **Identify the Components:** * Radius $(r) = 13$ cm * Distance from center $(d) = 5$ cm * Let half the chord length be x.

2. **Apply Pythagoras Theorem:** * $x^2 + d^2 = r^2$ * $x^2 + 5^2 = 13^2$ * $x^2 + 25 = 169$ * $x^2 = 144 \Rightarrow x = 12$ cm

3. **Find Full Chord Length:** * Length $= 2x = 2 \times 12 = 24$ cm

Final Answer: 24cm

Answer: (B)

Q21.

Solution

Concept: To solve a system of linear equations with two variables, we can use the method of substitution or elimination. Here, we will use elimination to remove y by making its coefficients equal in both equations.

Solution: 1. **Identify the Equations:** * Eq (1): $2x + 3y = 8$ * Eq (2): $3x - y = 1$

2. **Equate the Coefficients of y:** * Multiply Eq (2) by 3: * $3(3x - y) = 3(1)$ * $9x - 3y = 3$ — Eq (3)

3. **Eliminate y by Adding Eq (1) and Eq (3):** * $(2x + 3y) + (9x - 3y) = 8 + 3$ * $11x = 11$ * $x = 1$

4. **Solve for y:** * Substitute $x = 1$ into Eq (2): * $3(1) - y = 1$ * $3 - y = 1$ * $y = 2$

5. **Verify the Point:** $(1, 2)$ * In Eq (1): $2(1) + 3(2) = 2 + 6 = 8$ (Correct)

Final Answer: (1, 2)

Answer: (A)

Q22.

Solution

Concept: The perimeter of a semi-circular protractor includes both the curved arc (πr) and the straight diameter ($2r$). We use the given perimeter to solve for the radius and then calculate the diameter.

Solution: 1. **Set up the Formula:** * Perimeter $= \pi r + 2r = r(\pi + 2)$ * Given Perimeter = 36 cm.

2. **Solve for r:** * $36 = r\left(\frac{22}{7} + 2\right)$ * $36 = r\left(\frac{22+14}{7}\right)$ * $36 = r\left(\frac{36}{7}\right)$ * $r = \frac{36\times7}{36} = 7$ cm

3. **Calculate Diameter:** * Diameter $= 2r = 2 \times 7 = 14$ cm

Final Answer: 14cm

Answer: (B)

Q23.

Solution

Concept: The volume of a sphere is given by the formula $V = \frac{4}{3}\pi r^3$. Since the volume is proportional to the cube of the radius ($V \propto r^3$), any change in the radius results in a cubic change in the volume.

Solution: 1. **Identify the Initial Volume:** * $V_1 = \frac{4}{3}\pi r^3$

2. **Calculate the New Volume:** * New radius $(R) = 2r$ * $V_2 = \frac{4}{3}\pi(2r)^3$ * $V_2 = \frac{4}{3}\pi(8r^3)$

3. **Compare Volumes:** * $V_2 = 8 \times \left(\frac{4}{3}\pi r^3\right)$ * $V_2 = 8 \times V_1$

Final Answer: 8 times

Answer: (C)

Q24.

Solution

Concept: When a wire is bent from one shape to another, the total length of the wire remains constant. This means the circumference of the original circle is equal to the perimeter of the resulting square.

Solution: 1. **Calculate the Length of the Wire:** * Circumference of circle = $2\pi r$ * Length = $2 \times \frac{22}{7} \times 42$ * Length = $2 \times 22 \times 6 = 264$ cm

2. **Relate to the Square:** * Perimeter of square = $4 \times \text{side}(a)$ * $4a = 264$

3. **Solve for Side (a):** * $a = \frac{264}{4} = 66$ cm

Final Answer: 66cm

Answer: (A)

Q25.

Solution

Concept: Coding-decoding often follows a specific positional shift in the alphabet. By comparing the position of each letter in the word to its corresponding letter in the code, we determine the numerical pattern (addition or subtraction).

Solution: 1. **Analyze the Given Code (GOLD $\rightarrow$ IQLF):** * $G \xrightarrow{+2} I$ * $O \xrightarrow{+2} Q$ * $L \xrightarrow{+0} L$ (Note: Here, $L \xrightarrow{+0} L$ or $D \xrightarrow{+2} F$. Let's re-verify). * Correction: $G(+2) = I$, $O(+2) = Q$, $L(+0) = L$ is unlikely. Looking at $G(+2) = I, O(+2) = Q, L(+2) = N, D(+2) = F$. * Given code "IQLF" for "GOLD" implies: $G + 2 = I, O + 2 = Q, L + 0 = L, D + 2 = F$.

2. **Apply to WIND:** * $W \xrightarrow{+2} Y$ * $I \xrightarrow{+2} K$ * $N \xrightarrow{+2} P$ * $D \xrightarrow{+2} F$

3. **Result:** The code is YKPF.

Final Answer: YKPF

Answer: (A)

Q26.

Solution

Concept: In blood relation puzzles involving "pointing to" someone, it is helpful to break the statement down from the end to the beginning.

Solution: 1. **Analyze the phrase "my father's son":** * The man says, "I have no brother or sister." * Therefore, his "father's son" can only be **himself**.

2. **Substitute this back into the statement:** * The statement "that man's father is **my father's son**" becomes: * "That man's father is **me** (the speaker)."

3. **Conclusion:** * If the speaker is the father of the man in the photograph, then the photograph is of **his son**.

Final Answer: His son's

Answer: (B)

Q27.

Solution

Concept: This problem tracks the orientation of an individual after a series of turns. Each "Right" or "Left" turn results in a 90° change in direction relative to the current heading.

Solution: 1. **Initial Movement:** The man walks **East**. 2. **First Turn:** He turns **Right**. * If facing East, a Right turn points you **South**. 3. **Second Movement:** He walks 4km while facing South. 4. **Second Turn:** He turns **Left**. * If facing South, a Left turn points you **East**. 5. **Final Direction:** He is now facing East.

Final Answer: East

Answer: (C)

Q28.

Solution

Concept: This is a number series where each subsequent term is derived by adding an increasing even number to the previous term.

Solution: 1. **Analyze the Differences:** * 2 + **4** = 6 * 6 + **6** = 12 * 12 + **8** = 20 * 20 + **10** = 30 2. **Identify the Pattern:** The numbers being added are 4, 6, 8, 10... (consecutive even numbers). 3. **Calculate the Next Term:** * The next number to add is 12. * 30 + 12 = 42

Final Answer: 42

Answer: (B)

Q29.

Solution

Concept: An analogy establishes a relationship between two words. The first pair defines the relationship, which must be applied to the second pair.

Solution: 1. **Analyze the First Pair:** Moon : Satellite * The Moon is a natural satellite of the Earth. The relationship is **[Object] : [Classification]**.

2. **Apply to the Second Pair:** Earth : ? * Earth is classified as a planet.

Final Answer: Planet

Answer: (B)

Q30.

Solution

Concept: This task requires identifying the item that does not share the common characteristic of the other three.

Solution: 1. **Analyze the Options:** * Mercury, Venus, and Mars are all **planets** in our solar system. * The Moon is a **satellite** (moon) orbiting a planet.

2. **Conclusion:** The Moon is the odd one out because it is not a planet.

Final Answer: Moon

Answer: (C)

Q31.

Solution

Concept: This series uses pairs of letters. We analyze the progression of the first letter and the second letter of each pair separately.

Solution: 1. **First Letter Progression:** $A, C, E, \ldots$ * $A \xrightarrow{+2} C$ * $C \xrightarrow{+2} E$ * $E \xrightarrow{+2}$ **G**

2. **Second Letter Progression:** $Z, X, V, \ldots$ * $Z \xrightarrow{-2} X$ * $X \xrightarrow{-2} V$ * $V \xrightarrow{-2}$ **T**

3. **Combined Result:** GT

Final Answer: GT

Answer: (A)

Q32.

Solution

Concept: This is a comparison-based coding problem. By identifying common words in two sentences and the common digits in their corresponding codes, we can isolate the specific code for a word.

Solution: 1. **Compare the Sentences:** * Sentence 1: "hot filtered coffee" → **1 2 3** * Sentence 2: "very hot day" → **3 5 6**

2. **Identify Common Elements:** * Common Word: **"hot"** * Common Digit: **3**

3. **Conclusion:** The digit 3 stands for "hot".

Final Answer: 3

Answer: (C)

Q33.

Solution

Concept: Mapping generational levels is the most effective way to solve complex family trees. Each level represents one generation (parents above, children below).

Solution: 1. **Step-by-Step Mapping:** * A is B's sister. (A, B are same generation). * C is B's mother. (C is 1 generation above A and B). * D is C's father. (D is 2 generations above A and B). * E is D's mother. (E is 3 generations above A and B).

2. **Determine Relationship:** * D is the father of A's mother (C). * This makes D the maternal grandfather of A. * Therefore, A is the granddaughter of D.

Final Answer: Granddaughter

Answer: (D)

Q34.

Solution

Concept: Syllogisms are solved by checking if conclusions necessarily follow from the given statements. We use Venn diagrams to represent the relationships between the sets (Rain, Water, and Blue).

Solution: 1. **Analyze the Statements:** * "All rain are water": The circle for 'Rain' is entirely inside 'Water'. * "Some water are blue": The circle for 'Blue' overlaps with 'Water'.

2. **Evaluate Conclusion I (Some rain are blue):** * There is no direct link between 'Rain' and 'Blue'. While it is possible for them to overlap, it is not *necessarily* true. Thus, it does not follow.

3. **Evaluate Conclusion II (Some blue are water):** * Since "Some water are blue," it automatically implies that there is a common area between the two sets. Therefore, "Some blue are water" is definitely true.

Final Answer: Only II follows

Answer: (B)

Q35.

Solution

Concept: To solve linear seating arrangements, we place participants relative to fixed points (like "ends") and then fill in the remaining positions based on the provided constraints (Left/Right).

Solution: 1. **Identify Fixed Points:** * P is at one end. * S is next to P. This means P must be at the right end (...S, P) because if P were at the left end, S would be to its right, but the next clue says R is to the left of S.

2. **Place the remaining participants:** * "R is to the immediate left of S": $\rightarrow R, S, P$ * "T is to the immediate right of Q": $\rightarrow Q, T, R, S, P$

3. **Determine the Middle:** * The order is Q, T, R, S, P. * The middle person is R.

Final Answer: R

Answer: (A)

Q36.

Solution

Concept: The total number of people in a row is given by the formula: Total = (Rank from Top + Rank from Bottom) − 1. We subtract 1 because the same person is counted twice.

Solution: 1. **Identify Given Values:** * Total students = 45 * Neha's Rank from Top = 15 2. **Apply the Formula:** * 45 = (15 + Rank from Bottom) − 1 * 45 = 14 + Rank from Bottom 3. **Solve:** * Rank from Bottom = 45 − 14 = 31

Final Answer: 31

Answer: (B)

Q37.

Solution

Concept: Venn Diagrams represent logical relationships between different sets. In this case, we must categorize the relationship between "Females", "Mothers", and "Doctors".

Solution: 1. **Analyze the relationship between Females and Mothers:** * All mothers are biologically female. Therefore, the "Mothers" set must be a subset of the "Females" set. In a Venn diagram, this is represented by a smaller circle (Mothers) entirely inside a larger circle (Females). 2. **Analyze the relationship with Doctors:** * A "Doctor" can be a female, a male, a mother, or someone who is not a mother. * This means the "Doctors" circle must overlap with both the "Females" circle and the "Mothers" circle, as some doctors are mothers and some doctors are females who are not mothers. 3. **Evaluate the Options:** * **(A):** Incorrectly suggests that no mother can be a doctor (no overlap between Mothers and Doctors). * **(B):** Correct. Shows Mothers inside Females, with Doctors intersecting both. * **(C):** Incorrectly suggests that some mothers are not females. * **(D):** Incorrectly suggests that only some mothers are females.

Final Answer: (B)

Answer: (B)

Q38.

Solution

Concept: At any given time, the minute hand is exactly at its designated position, but the hour hand has moved slightly forward from the hour mark due to the minutes passed. We calculate the positions of both hands in degrees relative to the 12 o'clock position.

Solution: 1. **Formula for Angle:** The angle θ between the hands is given by: * $\theta = |30H - 5.5M|$ * where H is the hour and M is the minutes.

2. **Identify Given Values:** * $H = 4$ * $M = 20$

3. **Calculation:** * $\theta = |30(4) - 5.5(20)|$ * $\theta = |120 - 110|$ * $\theta = 10^\circ$

4. **Logical Check:** At 4:20, the minute hand is exactly at the 4 (which is 120° from the top). The hour hand started at the 4 (120°) and moved 0.5° per minute for 20 minutes. * Hour hand position: $120^\circ + (20 \times 0.5^\circ) = 130^\circ$. * Difference: $130^\circ - 120^\circ = 10^\circ$.

Final Answer: 10°

Answer: (B)

Q39.

Solution

Concept: A mirror image represents a lateral inversion. When a mirror is placed to the right, the sequence of letters is reversed (the last letter becomes first), and each individual letter is reflected horizontally.

Solution: 1. **Analyze the String:** The word is **QUALITY**. 2. **Reverse the Sequence:** Reading from right to left, the order becomes **Y-T-I-L-A-U-Q**. 3. **Lateral Inversion of Characters:** * **Symmetrical Letters:** Y, T, I, A, and U appear identical in a mirror. * **Asymmetrical Letters:** * **L:** The horizontal base points to the right in the original; in the mirror, it points to the left. * **Q:** The tail points to the bottom-right in the original; in the mirror, it points to the bottom-left.

4. **Identify the Correct Option:** * Option (A) fails because the characters themselves are not reflected. * Options (B) and (C) contain spelling errors. * Option **(D)** correctly reverses the sequence and reflects the individual character shapes.

Final Answer: (D)

Answer: (D)

Q40.

Solution

Concept: This problem involves spatial reasoning and mental rotation. The logic follows a horizontal pattern where each succeeding shape in a row is the result of rotating the preceding shape by 90° clockwise.

Solution: 1. **Identify the Pattern:** * Rule: Current Shape + 90° Clockwise = Next Shape.
2. **Analyze the Third Row:** * The second box contains a "T" shape in its standard upright position (stem pointing down, crossbar at the top).
3. **Perform the Rotation:** * Rotate the upright "T" by 90° clockwise. * The crossbar, originally at the top (12 o'clock), moves to the right (3 o'clock). * The stem, originally pointing down (6 o'clock), now points to the left (9 o'clock).
4. **Evaluate the Options:** * **(A):** Upright "T" (Original position). * **(B):** "T" rotated 270° clockwise (Crossbar on the left). * **(C):** "T" rotated 90° clockwise (Crossbar on the right). * **(D):** "T" rotated 180° (Upside down).

Final Answer: (C)

Answer: (C)

Q41.

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 of the summit is held by the head of government of the host nation.

Solution: 1. **Event Details:** India held the G20 Presidency from December 1, 2022, to November 30, 2023. 2. **Host Leader:** As the Prime Minister of the host country, India, Narendra Modi presided over the 18th G20 Summit held in New Delhi in September 2023. 3. **Theme:** The summit was held under the theme "Vasudhaiva Kutumbakam" or "One Earth · One Family · One Future."

Final Answer: Narendra Modi

Answer: (A)

Q42.

Solution

Concept: The ICC Men's Cricket World Cup is the international championship of One Day International (ODI) cricket. The 2023 edition was hosted entirely by India.

Solution: 1. **The Final Match:** The final was played between India and Australia at the Narendra Modi Stadium, Ahmedabad. 2. **Result:** Australia defeated India by 6 wickets to claim their sixth World Cup title. 3. **Key Performer:** Travis Head was named Player of the Match for his century in the final.

Final Answer: Australia

Answer: (B)

Q43.

Solution

Concept: The Quit India Movement, also known as the "August Movement," was a civil disobedience movement launched by Mahatma Gandhi during World War II, demanding an end to British rule in India.

Solution: 1. **Launch Date:** The movement was launched by the All India Congress Committee at the Bombay session on August 8, 1942. 2. **Slogan:** Mahatma Gandhi gave the famous call of "Do or Die" (Karo ya Maro) during this movement. 3. **Significance:** It was a major turning point that signaled the nearing end of British colonial administration.

Final Answer: 1942

Answer: (C)

Q44.

Solution

Concept: Fundamental Rights are enshrined in Part III of the Indian Constitution. The Right to Equality is the first category of these rights, ensuring equal treatment before the law.

Solution: 1. **Article 14:** Guarantees equality before the law and equal protection of the laws within the territory of India. 2. **Comparison:** * Article 17 deals with the "Abolition of Untouchability." * Article 21 deals with the "Protection of Life and Personal Liberty." * Article 32 deals with "Constitutional Remedies."

Final Answer: Art 14

Answer: (A)

Q45.

Solution

Concept: Certain rivers are nicknamed "sorrows" of specific regions due to their tendency to cause devastating annual floods, leading to loss of life and property.

Solution: 1. **River Characteristics:** The Kosi River is a transboundary river flowing through Tibet, Nepal, and India. 2. **Flood Pattern:** It is notorious for shifting its course frequently and causing heavy siltation, which leads to massive flooding in the plains of North Bihar. 3. **Nickname:** Due to this destructive nature, it is popularly called the "Sorrow of Bihar."

Final Answer: Kosi

Answer: (B)

Q46.

Solution

Concept: The Bharat Ratna is India's highest civilian award. It is conferred in recognition of exceptional service or performance of the highest order in any field of human endeavor.

Solution: 1. **The Awardee:** In 2024, the Bharat Ratna was conferred upon Karpoori Thakur posthumously. 2. **Background:** Known as "Jan Nayak" (People's Leader), he was a prominent socialist leader and the former Chief Minister of Bihar, celebrated for his work toward the upliftment of the backward classes. 3. **Other 2024 Awardees:** The award was also conferred upon Lal Krishna Advani, P.V. Narasimha Rao, Chaudhary Charan Singh, and M.S. Swaminathan.

Final Answer: Karpoori Thakur

Answer: (A)

Q47.

Solution

Concept: Fundamental Duties were not part of the original Constitution. They were added based on the recommendations of the Swaran Singh Committee to emphasize the obligations of citizens toward the nation.

Solution: 1. **The Amendment:** The **42nd Amendment Act, 1976**, added 10 Fundamental Duties to the Constitution under Part IV-A (Article 51A). 2. **Additional Info:** An 11th Fundamental Duty (regarding education for children) was later added by the 86th Amendment Act in 2002. 3. **Nature:** These duties are non-justiciable, meaning they cannot be enforced directly by the courts.

Final Answer: 42nd

Answer: (A)

Q48.

Solution

Concept: The World Health Organization (WHO) is a specialized agency of the United Nations responsible for international public health.

Solution: 1. **Location:** The headquarters of the WHO is located in **Geneva, Switzerland**. 2. **Founding:** It was established on April 7, 1948 (celebrated annually as World Health Day). 3. **Other HQs:** * New York (UN), Paris (UNESCO), Rome (FAO).

Final Answer: Geneva

Answer: (B)

Q49.

Solution

Concept: The transition of power in India involved specific constitutional roles. It is important to distinguish between the first Governor-General of *independent* India and the first *Indian* Governor-General.

Solution: 1. **Lord Mountbatten:** Served as the last Viceroy of British India and became the **first Governor-General of independent India** from 1947 to 1948. 2. **C. Rajagopalachari:** Succeeded Mountbatten to become the first and only **Indian** Governor-General of India.

Final Answer: Lord Mountbatten

Answer: (B)

Q50.

Solution

Concept: Vitamins are essential organic compounds. Each vitamin has a specific chemical name and plays a unique role in human health.

Solution: 1. **Ascorbic Acid:** This is the chemical name for **Vitamin C**. 2. **Properties:** It is a water-soluble vitamin and a powerful antioxidant. 3. **Deficiency:** A deficiency of Vitamin C leads to a disease called **Scurvy**, characterized by bleeding gums. 4. **Sources:** Citrus fruits like oranges, lemons, and amla are rich sources.

Final Answer: Vit C

Answer: (C)

Answer Key

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