

FDDI AIST Quantitative & Analytical Ability

Sample Paper – 1

Duration: 25 Minutes

Maximum Marks: 25

Instructions

- This paper contains **25** Multiple Choice Questions (Single Correct Answer), modelled on the Quantitative & Analytical Ability section of **FDDI AIST**.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct per question.
- Syllabus level: **Class 10–12 Mathematics and basic analytical reasoning**.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

Q1. The first four digits of a 5-digit number are 7, 5, 8, and 3. The sum of all five digits is 27 and the number is divisible by 9. What is the fifth digit?

- (A) 4
- (B) 5
- (C) 6
- (D) 7

Q2. What is the LCM of 12, 18 and 24?

- (A) 36
- (B) 72
- (C) 144
- (D) 216



- Q3.** How many trailing zeros does $25!$ have?
- (A) 4
 - (B) 5
 - (C) 6
 - (D) 7
- Q4.** Rs. 720 is divided between two persons in the ratio 3 : 5. The smaller share is:
- (A) Rs. 200
 - (B) Rs. 250
 - (C) Rs. 300
 - (D) Rs. 270
- Q5.** The ages of a father and son are in the ratio 3 : 1. After 12 years, their ratio will be 2 : 1. The son's current age is:
- (A) 12 years
 - (B) 10 years
 - (C) 15 years
 - (D) 8 years
- Q6.** 35% of a number is 140. What is 75% of the same number?
- (A) 250
 - (B) 300
 - (C) 350
 - (D) 400
- Q7.** A shopkeeper sells an article for Rs. 540 at a profit of 20%. What is the cost price?
- (A) Rs. 400



- (B) Rs. 420
- (C) Rs. 450
- (D) Rs. 480

Q8. A shirt has a marked price of Rs. 800. A discount of 15% is given. What is the selling price?

- (A) Rs. 650
- (B) Rs. 660
- (C) Rs. 670
- (D) Rs. 680

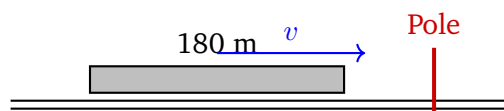
Q9. A can finish a piece of work in 12 days and B in 18 days. In how many days will they finish the work together?

- (A) $\frac{36}{5}$ days
- (B) 6 days
- (C) 8 days
- (D) 9 days

Q10. A pipe can fill a tank in 6 hours. Another pipe can empty the same tank in 8 hours. If both are open simultaneously, in how many hours will the tank be filled?

- (A) 20 h
- (B) 24 h
- (C) 32 h
- (D) 48 h

Q11. A train 180 m long passes a stationary pole in 9 seconds. What is the speed of the train in km/h?



- (A) 60 km/h
- (B) 64 km/h
- (C) 72 km/h
- (D) 80 km/h

Q12. The speed of a boat in still water is 15 km/h and the speed of the stream is 3 km/h. How far can the boat travel upstream in 2 hours?

- (A) 18 km
- (B) 20 km
- (C) 22 km
- (D) 24 km

Q13. Find the simple interest on Rs. 5,000 at 8% per annum for 3 years.

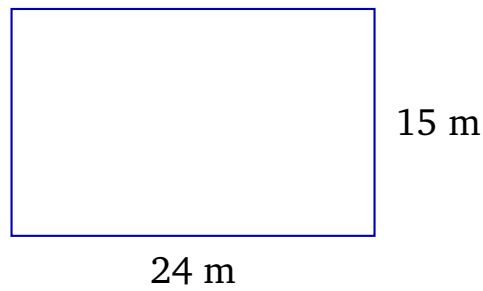
- (A) Rs. 1,200
- (B) Rs. 1,500
- (C) Rs. 1,800
- (D) Rs. 2,400

Q14. Rs. 8,000 is invested at 10% per annum compound interest for 2 years. What is the compound interest earned?

- (A) Rs. 1,500
- (B) Rs. 1,680
- (C) Rs. 1,600
- (D) Rs. 1,800

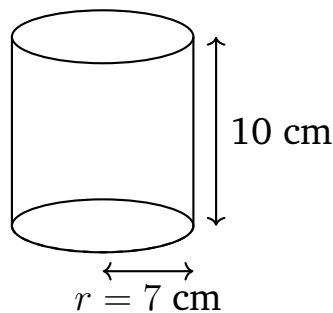
Q15. A rectangular field has length 24 m and breadth 15 m. What is its perimeter?





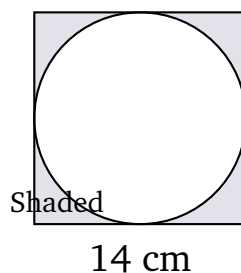
- (A) 70 m
- (B) 72 m
- (C) 78 m
- (D) 80 m

Q16. A solid cylinder has base radius 7 cm and height 10 cm. Find its volume.
(Use $\pi = \frac{22}{7}$)



- (A) $1,400 \text{ cm}^3$
- (B) $1,480 \text{ cm}^3$
- (C) $1,520 \text{ cm}^3$
- (D) $1,540 \text{ cm}^3$

Q17. A circle is inscribed in a square of side 14 cm (the circle touches all four sides). Find the area of the shaded region (inside the square but outside the circle). (Use $\pi = \frac{22}{7}$)



- (A) 42 cm^2
- (B) 46 cm^2
- (C) 48 cm^2
- (D) 50 cm^2

Q18. A bag contains 5 red, 3 green and 2 blue balls. One ball is drawn at random. What is the probability of drawing a red ball?

- (A) $\frac{1}{3}$
- (B) $\frac{1}{2}$
- (C) $\frac{2}{5}$
- (D) $\frac{3}{10}$

Q19. In how many ways can the letters of the word **EXAM** be arranged?

- (A) 12
- (B) 18
- (C) 24
- (D) 48

Q20. The average of 5 numbers is 42. When a sixth number is added, the average becomes 44. What is the sixth number?

- (A) 48
- (B) 50
- (C) 52
- (D) 54

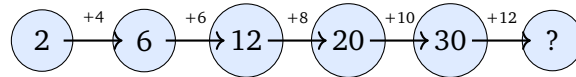
Q21. A box of 15 items has average weight 20 kg. Another box of 10 items has average weight 25 kg. What is the combined average weight?

- (A) 22 kg
- (B) 23 kg



- (C) 24 kg
- (D) 25 kg

Q22. What is the next term in the series: 2, 6, 12, 20, 30, ___?



- (A) 38
- (B) 42
- (C) 44
- (D) 46

Q23. In a certain code, each letter is replaced by the next letter in the English alphabet ($A \rightarrow B, B \rightarrow C, \dots, Z \rightarrow A$). Using this code, the code word for **CAT** is:

- (A) CBU
- (B) DAU
- (C) DBU
- (D) DCU

Q24. A is B's father. C is A's sister. How is C related to B?

- (A) Grandmother
- (B) Mother
- (C) Cousin
- (D) Aunt

Q25. Starting from point P, Arjun walks 5 m North, then turns right and walks 3 m, then turns right again and walks 5 m. In which direction is he now from his starting point P?

- (A) East



- (B) West
- (C) North
- (D) South



Detailed Solutions**Q1.****Solution**

Quick Solution: Concept: Divisibility by 9. **Chapter:** Number System. A number is divisible by 9 if and only if the sum of its digits is divisible by 9. **Answer:** A.

Concept — Divisibility by 9: A number is divisible by 9 if and only if the sum of its digits is divisible by 9. We use this rule to find the missing digit.

Step 1 — Sum of known digits: $7 + 5 + 8 + 3 = 23$.

Step 2 — Find the fifth digit: Required digit sum = 27 (the next multiple of 9 above 23). Fifth digit = $27 - 23 = 4$.

Step 3 — Verify divisibility: Digit sum = $23 + 4 = 27$, and $27 \div 9 = 3$. ✓

Why other options are wrong:

- Option B (5): digit sum = 28, not divisible by 9.
- Option C (6): digit sum = 29, not divisible by 9.
- Option D (7): digit sum = 30, not divisible by 9.

Final Answer: The fifth digit is 4. $\Rightarrow$ **A**

Answer: (A) [Go Back to Q 1](#)

Q2.**Solution**

Quick Solution: Concept: Least Common Multiple (LCM). **Chapter:** Number System. The LCM of numbers is found by prime factorisation; take the highest power of each prime that appears. **Answer:** B.

Concept — Least Common Multiple (LCM): The LCM of numbers is found by prime factorisation; take the highest power of each prime that appears.

Step 1 — Prime factorisations: $12 = 2^2 \times 3$, $18 = 2 \times 3^2$, $24 = 2^3 \times 3$.

Step 2 — LCM: Take highest powers: $2^3 \times 3^2 = 8 \times 9 = 72$.

Why other options are wrong:

- Option A (36): $36 = 2^2 \times 3^2$; not divisible by 24 since $36/24$ is not an integer.
- Option C (144): a common multiple, but not the *least*.



- Option D (216): also a common multiple, larger than 72.

Final Answer: $\text{LCM}(12, 18, 24) = 72. \Rightarrow \boxed{\text{B}}$

Answer: (B) [Go Back to Q 2](#)

Q3.

Solution

Quick Solution: Concept: Trailing zeros in $n!$. **Chapter:** Number System. Each trailing zero comes from a factor of $10 = 2 \times 5$. **Answer:** C.

Concept — Trailing zeros in $n!$: Each trailing zero comes from a factor of $10 = 2 \times 5$. Since factors of 2 are plentiful, we count factors of 5 using Legendre's formula.

Step 1 — Apply the formula:

$$\left\lfloor \frac{25}{5} \right\rfloor + \left\lfloor \frac{25}{25} \right\rfloor = 5 + 1 = 6.$$

Step 2 — Interpret: Numbers 5, 10, 15, 20, 25 contribute at least one factor of 5 (total 5), and $25 = 5^2$ contributes one extra, giving 6 trailing zeros in $25!$.

Why other options are wrong:

- Option A (4): misses 25's extra factor of 5.
- Option B (5): counts only $\lfloor 25/5 \rfloor$, forgetting $\lfloor 25/25 \rfloor$.
- Option D (7): overcounts by one.

Final Answer: $25!$ has 6 trailing zeros. $\Rightarrow \boxed{\text{C}}$

Answer: (C) [Go Back to Q 3](#)

Q4.

Solution

Quick Solution: Concept: Ratio & Proportion. **Chapter:** Ratio & Proportion. To divide an amount in the ratio $a : b$, multiply the total by $\frac{a}{a+b}$ (for the smaller part if $a < b$). **Answer:** D.

Concept — Ratio & Proportion: To divide an amount in the ratio $a : b$, multiply the total by $\frac{a}{a+b}$ (for the smaller part if $a < b$).



Step 1 — Identify the smaller share: Ratio 3 : 5; total parts = $3 + 5 = 8$.

Step 2 — Calculate: Smaller share = $\frac{3}{8} \times 720 = \frac{2160}{8} = 270$.

Why other options are wrong:

- Option A (200): corresponds to ratio 5 : 9, not 3 : 5.
- Option B (250): corresponds to a ratio of 5 : 9, incorrect.
- Option C (300): that would be 300 : 420, ratio 5 : 7, not 3 : 5.

Final Answer: Smaller share = Rs. 270. $\Rightarrow$ D

Answer: (D) [Go Back to Q 4](#)

Q5.

Solution

Quick Solution: Concept: Age Problems using Ratios. **Chapter:** Ratio & Proportion. If current ages are in ratio $p : q$, let them be px and qx . **Answer:** A.

Concept — Age Problems using Ratios: If current ages are in ratio $p : q$, let them be px and qx . Set up an equation using the future ratio.

Step 1 — Set up variables: Son's current age = x , father's current age = $3x$.

Step 2 — Future ratio equation:

$$\frac{3x + 12}{x + 12} = \frac{2}{1}$$

$$\Rightarrow 3x + 12 = 2x + 24 \Rightarrow x = 12.$$

Step 3 — Verify: Son now: 12; Father now: 36. After 12 years: Son 24, Father 48; ratio = $48 : 24 = 2 : 1$. ✓

Why other options are wrong:

- Option B (10): $\frac{30+12}{10+12} = \frac{42}{22} \neq 2$.
- Option C (15): $\frac{45+12}{15+12} = \frac{57}{27} \neq 2$.
- Option D (8): $\frac{24+12}{8+12} = \frac{36}{20} \neq 2$.

Final Answer: Son's current age = 12 years. $\Rightarrow$ A

Answer: (A) [Go Back to Q 5](#)



Q6.

Solution

Quick Solution: Concept: Percentage. **Chapter:** Percentage. If $p\%$ of a number equals a given value, the number $= \frac{\text{value} \times 100}{p}$. **Answer:** B.

Concept — Percentage: If $p\%$ of a number equals a given value, the number $= \frac{\text{value} \times 100}{p}$.

Step 1 — Find the number: 35% of $N = 140 \Rightarrow N = \frac{140 \times 100}{35} = 400$.

Step 2 — Find 75%: 75% of $400 = \frac{75}{100} \times 400 = 300$.

Why other options are wrong:

- Option A (250): would be 62.5% of 400.
- Option C (350): would be 87.5% of 400.
- Option D (400): would be 100%, i.e. the number itself.

Final Answer: 75% of the number = 300. $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 6](#)

Q7.

Solution

Quick Solution: Concept: Profit & Loss. **Chapter:** Profit & Loss. $SP = CP \times \left(1 + \frac{\text{Profit}\%}{100}\right)$, so $CP = \frac{SP}{1 + \text{Profit}\%/100}$. **Answer:** C.

Concept — Profit & Loss: $SP = CP \times \left(1 + \frac{\text{Profit}\%}{100}\right)$, so $CP = \frac{SP}{1 + \text{Profit}\%/100}$.

Step 1 — Apply formula:

$$CP = \frac{540}{1 + 0.20} = \frac{540}{1.20} = 450.$$

Why other options are wrong:

- Option A (400): $400 \times 1.20 = 480 \neq 540$.
- Option B (420): $420 \times 1.20 = 504 \neq 540$.
- Option D (480): $480 \times 1.20 = 576 \neq 540$.

Final Answer: Cost price = Rs. 450. $\Rightarrow$ **C**



Answer: (C) [Go Back to Q 7](#)

Q8.

Solution

Quick Solution: **Concept:** Discount. **Chapter:** Discount. $SP = MP \times \left(1 - \frac{\text{Discount}\%}{100}\right)$. **Answer:** D.

Concept — Discount: $SP = MP \times \left(1 - \frac{\text{Discount}\%}{100}\right)$.

Step 1 — Apply formula:

$$SP = 800 \times (1 - 0.15) = 800 \times 0.85 = 680.$$

Why other options are wrong:

- Option A (650): corresponds to a discount of $\frac{150}{800} = 18.75\%$.
- Option B (660): corresponds to a 17.5% discount.
- Option C (670): corresponds to a 16.25% discount.

Final Answer: Selling price = Rs. 680. $\Rightarrow$ **D**

Answer: (D) [Go Back to Q 8](#)

Q9.

Solution

Quick Solution: **Concept:** Time & Work. **Chapter:** Time & Work. Combined rate of work = sum of individual rates. **Answer:** A.

Concept — Time & Work: Combined rate of work = sum of individual rates. If A finishes in a days and B in b days, together they finish in $\frac{ab}{a+b}$ days.

Step 1 — Individual rates: A's rate = $\frac{1}{12}$ work/day; B's rate = $\frac{1}{18}$ work/day.

Step 2 — Combined rate:

$$\frac{1}{12} + \frac{1}{18} = \frac{3}{36} + \frac{2}{36} = \frac{5}{36} \text{ work/day.}$$

Step 3 — Time together: $\frac{36}{5} = 7.2$ days.



Why other options are wrong:

- Option B (6): corresponds to rates $1/4 + 1/12$, not $1/12 + 1/18$.
- Option C (8): gives combined rate $1/8$, inconsistent with given data.
- Option D (9): similarly incorrect.

Final Answer: Together they finish in $\frac{36}{5}$ days. $\Rightarrow$ A

Answer: (A) [Go Back to Q 9](#)

Q10.

Solution

Quick Solution: Concept: Pipes & Cisterns. **Chapter:** Pipes & Cisterns. When one pipe fills (positive rate) and another empties (negative rate), the net rate determines how long it takes to fill the tank. **Answer:** B.

Concept — Pipes & Cisterns: When one pipe fills (positive rate) and another empties (negative rate), the net rate determines how long it takes to fill the tank.

Step 1 — Net filling rate:

$$\frac{1}{6} - \frac{1}{8} = \frac{4}{24} - \frac{3}{24} = \frac{1}{24} \text{ tank/hour.}$$

Step 2 — Time to fill: $\frac{1}{1/24} = 24$ hours.

Why other options are wrong:

- Option A (20): net rate would need to be $1/20$, which is not $1/24$.
- Option C (32): implies net rate $1/32$, inconsistent.
- Option D (48): implies net rate $1/48$, inconsistent.

Final Answer: The tank fills in 24 hours. $\Rightarrow$ B

Answer: (B) [Go Back to Q 10](#)



Q11.

Solution

Quick Solution: Concept: Speed of a Train. **Chapter:** Time & Distance. When a train passes a stationary pole, it travels a distance equal to its own length. **Answer:** C.

Concept — Speed of a Train: When a train passes a stationary pole, it travels a distance equal to its own length. $\text{Speed} = \frac{\text{Length}}{\text{Time}}$.

Step 1 — Speed in m/s:

$$v = \frac{180 \text{ m}}{9 \text{ s}} = 20 \text{ m/s.}$$

Step 2 — Convert to km/h:

$$20 \times \frac{18}{5} = 20 \times 3.6 = 72 \text{ km/h.}$$

Why other options are wrong:

- Option A (60 km/h): $= \frac{50}{3} \text{ m/s}$; train would cover $\frac{50}{3} \times 9 = 150 \text{ m}$, not 180 m.
- Option B (64 km/h): $\approx 17.78 \text{ m/s}$; $17.78 \times 9 \approx 160 \text{ m}$.
- Option D (80 km/h): $\approx 22.22 \text{ m/s}$; $22.22 \times 9 = 200 \text{ m}$.

Final Answer: Speed of the train = 72 km/h. $\Rightarrow$ C

Answer: (C) [Go Back to Q 11](#)

Q12.

Solution

Quick Solution: Concept: Boats & Streams. **Chapter:** Time & Distance. Upstream speed = speed in still water – stream speed. **Answer:** D.

Concept — Boats & Streams: Upstream speed = speed in still water – stream speed. Distance = speed $\times$ time.

Step 1 — Upstream speed: $15 - 3 = 12 \text{ km/h}$.

Step 2 — Distance in 2 hours: $d = 12 \times 2 = 24 \text{ km}$.

Why other options are wrong:

- Option A (18 km): uses speed 9 km/h (i.e. $15 - 6$), wrong subtraction.



- Option B (20 km): uses upstream speed 10 km/h, incorrect.
- Option C (22 km): uses speed 11 km/h, incorrect.

Final Answer: Distance upstream = 24 km. $\Rightarrow$ D

Answer: (D) [Go Back to Q 12](#)

Q13.

Solution

Quick Solution: Concept: Simple Interest. **Chapter:** Simple Interest. $SI = \frac{P \times R \times T}{100}$, where P = principal, R = rate %, T = time in years. **Answer:** A.

Concept — Simple Interest: $SI = \frac{P \times R \times T}{100}$, where P = principal, R = rate %, T = time in years.

Step 1 — Apply formula:

$$SI = \frac{5000 \times 8 \times 3}{100} = \frac{120000}{100} = 1200.$$

Why other options are wrong:

- Option B (1500): would require rate = 10% for 3 years.
- Option C (1800): would require rate = 12%.
- Option D (2400): would require rate = 16% or 4 years at 8%.

Final Answer: Simple interest = Rs. 1,200. $\Rightarrow$ A

Answer: (A) [Go Back to Q 13](#)

Q14.

Solution

Quick Solution: Concept: Compound Interest. **Chapter:** Compound Interest. $A = P \left(1 + \frac{R}{100}\right)^T$; $CI = A - P$. **Answer:** B.

Concept — Compound Interest: $A = P \left(1 + \frac{R}{100}\right)^T$; $CI = A - P$.



Step 1 — Compute Amount:

$$A = 8000 \times \left(1 + \frac{10}{100}\right)^2 = 8000 \times (1.1)^2 = 8000 \times 1.21 = 9680.$$

Step 2 — Compound Interest: $CI = 9680 - 8000 = 1680$.

Why other options are wrong:

- Option A (1500): is less than the simple interest $8000 \times 0.10 \times 2 = 1600$; impossible for $CI \geq SI$.
- Option C (1600): equals simple interest (not compound).
- Option D (1800): would require $(1 + r)^2 = 1.225$, i.e. $r \approx 10.68\%$, not 10%.

Final Answer: Compound interest = Rs. 1,680. $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 14](#)

Q15.

Solution

Quick Solution: Concept: Perimeter of a Rectangle. **Chapter:** Mensuration 2D. $P = 2(l + b)$, where l = length and b = breadth. **Answer:** C.

Concept — Perimeter of a Rectangle: $P = 2(l + b)$, where l = length and b = breadth.

Step 1 — Apply formula:

$$P = 2(24 + 15) = 2 \times 39 = 78 \text{ m.}$$

Why other options are wrong:

- Option A (70 m): $2(24 + 11) = 70$; uses wrong breadth.
- Option B (72 m): $2(24 + 12) = 72$; breadth taken as 12.
- Option D (80 m): $2(24 + 16) = 80$; breadth taken as 16.

Final Answer: Perimeter = 78 m. $\Rightarrow$ **C**

Answer: (C) [Go Back to Q 15](#)



Q16.

Solution

Quick Solution: Concept: Volume of a Cylinder. **Chapter:** Mensuration 3D.
 $V = \pi r^2 h$. **Answer:** D.

Concept — Volume of a Cylinder: $V = \pi r^2 h$.

Step 1 — Substitute values:

$$V = \frac{22}{7} \times 7^2 \times 10 = \frac{22}{7} \times 49 \times 10 = 22 \times 7 \times 10 = 1540 \text{ cm}^3.$$

Why other options are wrong:

- Option A (1400): $= \frac{22}{7} \times 49 \times \frac{10}{1.1}$; uses a wrong multiplier.
- Option B (1480): not obtainable from the given values.
- Option C (1520): not obtainable from the given values.

Final Answer: Volume = 1,540 cm³. $\Rightarrow$ **D**

Answer: (D) [Go Back to Q 16](#)

Q17.

Solution

Quick Solution: Concept: Area of Shaded Region. **Chapter:** Mensuration Combined. Shaded area = area of square – area of inscribed circle. **Answer:** A.

Concept — Area of Shaded Region: Shaded area = area of square – area of inscribed circle. The inscribed circle has radius = $\frac{\text{side}}{2} = 7$ cm.

Step 1 — Area of square: $14^2 = 196 \text{ cm}^2$.

Step 2 — Area of circle: $\pi r^2 = \frac{22}{7} \times 7^2 = \frac{22}{7} \times 49 = 154 \text{ cm}^2$.

Step 3 — Shaded region: $196 - 154 = 42 \text{ cm}^2$.

Why other options are wrong:

- Option B (46): error in circle area calculation.
- Option C (48): uses $\pi \approx 3$, giving circle area = 147; $196 - 147 = 49 \neq 48$.
- Option D (50): uses an incorrect π or radius.

Final Answer: Shaded area = 42 cm². $\Rightarrow$ **A**

Answer: (A) [Go Back to Q 17](#)



Q18.

Solution

Quick Solution: Concept: Classical Probability. **Chapter:** Probability. $P(\text{event}) = \frac{\text{favourable outcomes}}{\text{total outcomes}}$. **Answer:** B.

Concept — Classical Probability: $P(\text{event}) = \frac{\text{favourable outcomes}}{\text{total outcomes}}$.

Step 1 — Total balls: $5 + 3 + 2 = 10$.

Step 2 — Favourable outcomes (red): 5.

Step 3 — Probability: $P(\text{red}) = \frac{5}{10} = \frac{1}{2}$.

Why other options are wrong:

- Option A ($1/3$): = 3.33 out of 10; not the count of red balls.
- Option C ($2/5$): = 4 out of 10; not the count of red balls.
- Option D ($3/10$): is the probability of drawing a green ball.

Final Answer: $P(\text{red}) = \frac{1}{2} \Rightarrow \boxed{\text{B}}$

Answer: (B) [Go Back to Q 18](#)

Q19.

Solution

Quick Solution: Concept: Permutations of n distinct objects. **Chapter:** Combinations. The number of ways to arrange n distinct objects in a row is $n!$. **Answer:** C.

Concept — Permutations of n distinct objects: The number of ways to arrange n distinct objects in a row is $n!$.

Step 1 — Count letters: EXAM has 4 distinct letters: E, X, A, M.

Step 2 — Total arrangements: $4! = 4 \times 3 \times 2 \times 1 = 24$.

Why other options are wrong:

- Option A (12): = $3!$ or $4!/2$; applies to 3-letter or repeated-letter cases.
- Option B (18): not a factorial of any small integer.
- Option D (48): = $2 \times 4!$; overcounts by a factor of 2.

Final Answer: Letters of EXAM can be arranged in 24 ways. $\Rightarrow \boxed{\text{C}}$



Answer: (C) [Go Back to Q 19](#)

Q20.

Solution

Quick Solution: Concept: Averages. **Chapter:** Averages. $\text{Sum} = \text{average} \times \text{count}$. **Answer:** D.

Concept — Averages: $\text{Sum} = \text{average} \times \text{count}$. The sixth number = new sum – old sum.

Step 1 — Sum of 5 numbers: $5 \times 42 = 210$.

Step 2 — Sum of 6 numbers: $6 \times 44 = 264$.

Step 3 — Sixth number: $264 - 210 = 54$.

Why other options are wrong:

- Option A (48): new sum = $210 + 48 = 258$; average = $258/6 = 43 \neq 44$.
- Option B (50): new average = $260/6 \approx 43.3 \neq 44$.
- Option C (52): new average = $262/6 \approx 43.7 \neq 44$.

Final Answer: The sixth number is 54. $\Rightarrow$ **D**

Answer: (D) [Go Back to Q 20](#)

Q21.

Solution

Quick Solution: Concept: Weighted Average. **Chapter:** Averages. Combined average = $\frac{\text{sum of all weights}}{\text{total number of items}} = \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2}$. **Answer:** A.

Concept — Weighted Average: Combined average = $\frac{\text{sum of all weights}}{\text{total number of items}} = \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2}$.

Step 1 — Total weight of each box: Box 1: $15 \times 20 = 300$ kg; Box 2: $10 \times 25 = 250$ kg.

Step 2 — Combined average:

$$\bar{x} = \frac{300 + 250}{15 + 10} = \frac{550}{25} = 22 \text{ kg.}$$



Why other options are wrong:

- Option B (23): simple average of 20 and 25 weighted equally; ignores differing group sizes.
- Option C (24): the midpoint if groups were equal-sized would be 22.5; 24 is not consistent.
- Option D (25): is only Box 2's average, not the combined average.

Final Answer: Combined average weight = 22 kg. $\Rightarrow$ A

Answer: (A) [Go Back to Q 21](#)

Q22.

Solution

Quick Solution: Concept: Number Series (Second-order differences). **Chapter:** Analytical — Series. Examine consecutive differences. **Answer:** B.

Concept — Number Series (Second-order differences): Examine consecutive differences. If differences form an arithmetic progression, the pattern is quadratic.

Step 1 — First differences: $6 - 2 = 4$; $12 - 6 = 6$; $20 - 12 = 8$; $30 - 20 = 10$. Differences: 4, 6, 8, 10 (increases by 2 each time).

Step 2 — Next difference: $10 + 2 = 12$.

Step 3 — Next term: $30 + 12 = 42$.

Why other options are wrong:

- Option A (38): implies difference = 8; but the pattern requires +12.
- Option C (44): implies difference = 14; overshoots by one step.
- Option D (46): implies difference = 16; skips a step in the AP of differences.

Final Answer: Next term = 42. $\Rightarrow$ B

Answer: (B) [Go Back to Q 22](#)



Q23.

Solution

Quick Solution: Concept: Coding-Decoding (Shift cipher). **Chapter:** Coding-Decoding. Each letter is replaced by its successor in the alphabet. **Answer:** C.

Concept — Coding-Decoding (Shift cipher): Each letter is replaced by its successor in the alphabet. Z wraps around to A.

Step 1 — Encode each letter of CAT:

$$C \rightarrow D, \quad A \rightarrow B, \quad T \rightarrow U.$$

Step 2 — Code word: DBU.

Why other options are wrong:

- Option A (CBU): C is not shifted (should be D).
- Option B (DAU): first letter correct, but A should become B, not remain A.
- Option D (DCU): C is shifted twice (D→E→... error); T should give U, not U.

Final Answer: Code for CAT is DBU. $\Rightarrow$ C

Answer: (C) [Go Back to Q 23](#)

Q24.

Solution

Quick Solution: Concept: Blood Relations. **Chapter:** Blood Relations. Map the given relations step-by-step. **Answer:** D.

Concept — Blood Relations: Map the given relations step-by-step. Identify gender where stated or implied.

Step 1 — Build the family tree:

- A is B's **father** $\Rightarrow$ A is male; B is A's child.
- C is A's **sister** $\Rightarrow$ C is female; A and C share the same parents.

Step 2 — Relation of C to B: C is the sister of B's father $\Rightarrow$ C is B's **paternal aunt**.

Why other options are wrong:

- Option A (Grandmother): would require C to be a parent of A, not a sibling.



- Option B (Mother): would require C to be A's spouse, not sibling.
- Option C (Cousin): cousins share grandparents; C and B do not fit that relation.

Final Answer: C is B's Aunt. $\Rightarrow$ D

Answer: (D) [Go Back to Q 24](#)

Q25.

Solution

Quick Solution: Concept: Direction Sense. **Chapter:** Direction Sense. Trace movements on a mental compass grid. **Answer:** A.

Concept — Direction Sense: Trace movements on a mental compass grid. "Turn right" means a 90° clockwise rotation of the current facing direction.

Step 1 — Trace movements:

- Start at P, face North; walk 5 m North. Position: (0, 5).
- Turn right (now facing East); walk 3 m East. Position: (3, 5).
- Turn right (now facing South); walk 5 m South. Position: (3, 0).

Step 2 — Direction from P: Final position (3, 0) vs. P at (0, 0). Displacement is +3 m along East axis, 0 along North/South. $\Rightarrow$ Arjun is **East** of P.

Why other options are wrong:

- Option B (West): would require a net westward displacement; turns were to the right (East), not left.
- Option C (North): net North/South displacement = $5 - 5 = 0$; no net northward position.
- Option D (South): same reasoning as C; net N/S = 0.

Final Answer: Arjun is to the **East** of P. $\Rightarrow$ A

Answer: (A) [Go Back to Q 25](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	B	3	C	4	D	5	A
6	B	7	C	8	D	9	A	10	B
11	C	12	D	13	A	14	B	15	C
16	D	17	A	18	B	19	C	20	D
21	A	22	B	23	C	24	D	25	A

