FDDI AIST Quantitative & Analytical Ability

Sample Paper – 3

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. What is the sum of all multiples of 7 between 1 and 100?

(A) 672

(B) 693

(C) 735

(D) 756

Q2. The product of two numbers is 240 and their LCM is 60. What is their HCF?

(A) 2

(B) 3

(C) 6

(D) 4

Q3. Which of the following is a perfect cube between 200 and 300?

(A) 216

(B) 225

(C) 256

(D) 289

Q4. A mixture of 50 L contains milk and water in ratio 3:2. How many litres of water must be added to make the ratio 1:1?

(A) 5 L

(B) 10 L

(C) 15 L

(D) 20 L

Q5. 8 workers complete a job in 6 days. Working at the same rate, in how many days will 12 workers complete the same job?

(A) 3 days

(B) 3.5 days

(C) 4 days

(D) 5 days

Q6. A number when decreased by 15% gives 425. What is the original number?

(A) 475

(B) 480

(C) 490

(D) 500

Q7. Articles are bought at Rs. 20 each and sold at Rs. 22 each. How many articles must be sold to make a profit of Rs. 1,000?

(A) 500

(B) 400

(C) 600

(D) 250

Q8. An item has an MRP of Rs. 1,200. A 25% discount is given, followed by an additional 10% cash discount. What is the final selling price?

(A) Rs. 780

(B) Rs. 810

(C) Rs. 840

(D) Rs. 860

Q9. A, B and C can complete a work in 20, 30 and 60 days respectively. In how many days will they complete it working together?

(A) 8 days

(B) 9 days

(C) 10 days

(D) 12 days

Q10. An inlet pipe fills a tank in 2 hours and an outlet pipe empties it in 4 hours. If both are open, what fraction of the tank is filled in 1 hour?

(A) $\frac{1}{2}$

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

(C) $\frac{1}{6}$

(D) $\frac{1}{4}$

Q11. Walking at 4 km/h, Sita misses a train by 10 minutes. Walking at 5 km/h, she reaches the station 8 minutes early. What is the distance to the station?

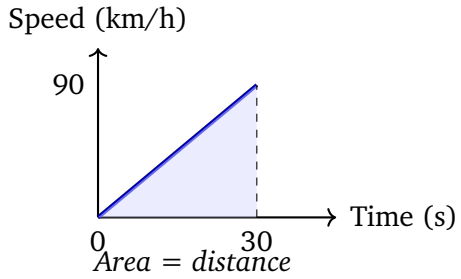
(A) 6 km

(B) 8 km

(C) 10 km

(D) 12 km

Q12. The speed-time graph of a vehicle is shown below. A vehicle starts from rest and accelerates uniformly to 90 km/h in 30 seconds. What distance does it cover during this acceleration phase?



(A) 300 m

(B) 375 m

(C) 450 m

(D) 500 m

Q13. In how many years will Rs. 3,600 double itself at 6% per annum simple interest?

(A) 14 years

(B) 15 years

(C) $16\frac{2}{3}$ years

(D) 18 years

Q14. Find the compound interest on Rs. 10,000 at 5% per annum for 2 years.

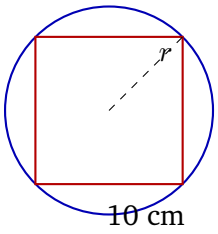
(A) Rs. 900

(B) Rs. 950

(C) Rs. 975

(D) Rs. 1,025

Q15. A circle is circumscribed around a square of side 10 cm. What is the area of the circle? (Use $\pi = 3.14$)



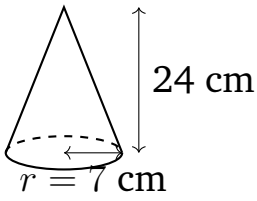
(A) 157 cm^2

(B) 172 cm^2

(C) 180 cm^2

(D) 200 cm^2

Q16. A cone has base radius 7 cm and height 24 cm. What is its volume? (Use $\pi = \frac{22}{7}$)



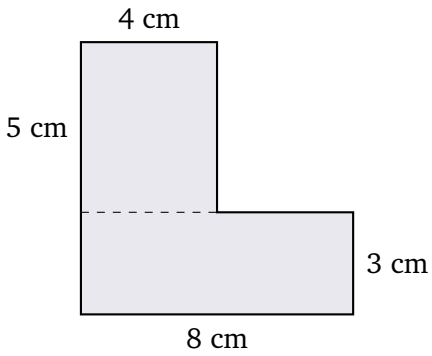
(A) 1,154 cm^3

(B) 1,232 cm^3

(C) 1,296 cm^3

(D) 1,386 cm^3

Q17. An L-shaped figure is formed by two rectangles: one measuring 8 cm $\times$ 3 cm and another measuring 4 cm $\times$ 5 cm joined along one side. What is the total area of the L-shaped figure?



(A) 38 cm^2

(B) 40 cm^2

(C) 44 cm^2

(D) 48 cm^2

Q18. Two dice are rolled simultaneously. What is the probability that the sum of the numbers shown is 7?

(A) $\frac{1}{9}$

(B) $\frac{1}{8}$

(C) $\frac{1}{7}$

(D) $\frac{1}{6}$

Q19. How many 3-digit numbers can be formed from the digits $\{1, 2, 3, 4, 5\}$ without repeating any digit?

(A) 60

(B) 45

(C) 72

(D) 120

Q20. The average of 10 numbers is 15. One number was mistakenly read as 14 instead of 56. What is the correct average?

(A) 17.2

(B) 19.2

(C) 18.6

(D) 20.4

Q21. A batsman has played 30 innings with an average score of 55 runs. How many runs must he score in his next innings to raise his average to 56?

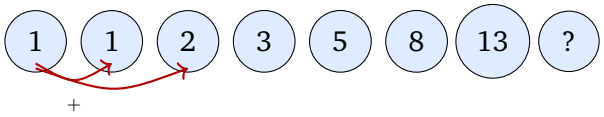
(A) 80

(B) 82

(C) 86

(D) 90

Q22. What is the next term in the Fibonacci-style series: $1,\ 1,\ 2,\ 3,\ 5,\ 8,\ 13,\ ____$?



(A) 18

(B) 19

(C) 20

(D) 21

Q23. If BAD $= 7$ (B$= 2$, A$= 1$, D$= 4$; sum of letter positions), what is the value of ACE?

(A) 9

(B) 8

(C) 10

(D) 12

Q24. A's brother's father is B's mother's husband. A is a male. How is B related to A?

(A) Father

(B) Sibling (Brother or Sister)

(C) Cousin

(D) Uncle

Q25. Karan starts from home and walks 10 m East, then 5 m North, then 10 m East, then 5 m South. What is his final displacement from home?

(A) 10 m

(B) 15 m

(C) 20 m

(D) 25 m

Detailed Solutions

Q1.

Solution

Quick Solution: Concept: Sum of an AP. **Chapter:** Number System. The sum of an arithmetic progression is $S = \frac{n}{2}(a + l)$, where a is the first term, l is the last term, and n is the number of terms. **Answer:** C.

Concept — Sum of an AP: The sum of an arithmetic progression is $S = \frac{n}{2}(a + l)$, where a is the first term, l is the last term, and n is the number of terms.

Step 1 — Identify the terms: Multiples of 7 between 1 and 100: $7, 14, 21, \ldots, 98$. This is an AP with $a = 7$, $d = 7$, $l = 98$.

Step 2 — Find n: $l = a + (n-1)d \Rightarrow 98 = 7 + (n-1) \times 7 \Rightarrow n - 1 = 13 \Rightarrow n = 14$.

Step 3 — Calculate the sum:

$$S = \frac{14}{2}(7 + 98) = 7 \times 105 = \mathbf{735}$$

Why other options are wrong:

- Option A (672): Under-counts; uses wrong last term.
- Option B (693): Off by one term ($n = 13$).
- Option D (756): Includes 105 which is beyond 100.

Final Answer: Sum of all multiples of 7 between 1 and 100 $= 735 \Rightarrow$ C

Answer: (C) Go Back to Q1

Q2.

Solution

Quick Solution: Concept: HCF and LCM relationship. **Chapter:** Number System. For any two numbers, HCF $\times$ LCM $=$ Product of the two numbers. **Answer:** D.

Concept — HCF and LCM relationship: For any two numbers, HCF $\times$ LCM $=$ Product of the two numbers.

Step 1 — Apply the formula:

$$\text{HCF} = \frac{\text{Product}}{\text{LCM}} = \frac{240}{60} = 4$$

Why other options are wrong:

- Option A (2): $2 \times 60 = 120 \neq 240$.
- Option B (3): $3 \times 60 = 180 \neq 240$.
- Option C (6): $6 \times 60 = 360 \neq 240$.

Final Answer: HCF $= 4 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q2

Q3.

Solution

Quick Solution: Concept: Perfect cubes. **Chapter:** Number System. n^3 gives perfect cubes: $5^3 = 125$, $6^3 = 216$, $7^3 = 343$. **Answer:** A.

Concept — Perfect cubes: n^3 gives perfect cubes: $5^3 = 125$, $6^3 = 216$, $7^3 = 343$.

Step 1 — Check each option:

- $6^3 = 216$ **(lies between 200 and 300 ✓)**
- $225 = 15^2$ (perfect square, not a cube)
- $256 = 2^8$ (not a perfect cube)
- $289 = 17^2$ (perfect square, not a cube)

Final Answer: $216 = 6^3$ is the perfect cube between 200 and 300 $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q3

Q4.

Solution

Quick Solution: Concept: Mixture and Alligation. **Chapter:** Ratio & Proportion. When water is added to a mixture, only the water content changes; milk remains constant. **Answer:** B.

Concept — Mixture and Alligation: When water is added to a mixture, only the water content changes; milk remains constant.

Step 1 — Find initial quantities: Total = 50 L; ratio milk:water $= 3 : 2$.

$$\text{Milk} = \frac{3}{5} \times 50 = 30 \text{ L}, \quad \text{Water} = \frac{2}{5} \times 50 = 20 \text{ L}$$

Step 2 — Set up equation for 1:1 ratio: Let x litres of water be added.

$$\frac{30}{20+x} = \frac{1}{1} \Rightarrow 20 + x = 30 \Rightarrow x = \mathbf{10}\ \text{L}$$

Why other options are wrong:

- Option A (5 L): $30/25 = 6:5 \neq 1:1$.
- Option C (15 L): $30/35$ gives ratio $6:7$, not 1:1.
- Option D (20 L): $30/40 = 3:4$, not 1:1.

Final Answer: 10 L of water must be added $\Rightarrow$ B

Answer: (B) Go Back to Q4

Q5.

Solution

Quick Solution: Concept: Inverse proportion (Workers and Days). **Chapter:** Ratio & Proportion. Workers $\times$ Days $=$ constant (total work). **Answer:** C.

Concept — Inverse proportion (Workers and Days): Workers $\times$ Days $=$ constant (total work).

Step 1 — Calculate total work:

$$\text{Total work} = 8 \times 6 = 48 \text{ worker-days}$$

Step 2 — Find days for 12 workers:

$$d = \frac{48}{12} = \mathbf{4}\ \text{days}$$

Why other options are wrong:

- Option A (3): $12 \times 3 = 36 \neq 48$.
- Option B (3.5): $12 \times 3.5 = 42 \neq 48$.
- Option D (5): $12 \times 5 = 60 \neq 48$.

Final Answer: 12 workers will complete the job in 4 days $\Rightarrow$ C

Answer: (C) Go Back to Q5

Q6.

Solution

Quick Solution: Concept: Percentage decrease. **Chapter:** Percentage. If a number x is decreased by 15%, the result is $0.85x$. **Answer:** D.

Concept — Percentage decrease: If a number x is decreased by 15%, the result is $0.85x$.

Step 1 — Form the equation:

$$0.85x = 425$$

Step 2 — Solve for x:

$$x = \frac{425}{0.85} = \frac{42500}{85} = \mathbf{500}$$

Verification: 15% of $500 = 75$; $500 - 75 = 425$ ✓

Why other options are wrong:

- Option A (475): $0.85 \times 475 = 403.75 \neq 425$.
- Option B (480): $0.85 \times 480 = 408 \neq 425$.
- Option C (490): $0.85 \times 490 = 416.5 \neq 425$.

Final Answer: The original number is 500 $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q6

Q7.

Solution

Quick Solution: Concept: Profit per unit. **Chapter:** Profit & Loss. Total Profit = Profit per article $\times$ Number of articles. **Answer:** A.

Concept — Profit per unit: Total Profit = Profit per article $\times$ Number of articles.

Step 1 — Calculate profit per article:

$$\text{Profit per article} = \text{SP} - \text{CP} = 22 - 20 = \text{Rs. } 2$$

Step 2 — Find number of articles:

$$\text{Number of articles} = \frac{1000}{2} = \mathbf{500}$$

Why other options are wrong:

- Option B (400): $400 \times 2 = \text{Rs. } 800 \neq 1000$.
- Option C (600): $600 \times 2 = \text{Rs. } 1200 \neq 1000$.
- Option D (250): $250 \times 2 = \text{Rs. } 500 \neq 1000$.

Final Answer: 500 articles must be sold $\Rightarrow$ A

Answer: (A) Go Back to Q7

Q8.

Solution

Quick Solution: Concept: Successive Discounts. **Chapter:** Discount. Each discount is applied to the reduced price, not to the original MRP. **Answer:** B.

Concept — Successive Discounts: Each discount is applied to the reduced price, not to the original MRP.

Step 1 — Apply 25% discount:

$$\text{Price after 1st discount} = 1200 \times (1 - 0.25) = 1200 \times 0.75 = \text{Rs. } 900$$

Step 2 — Apply 10% cash discount:

$$\text{Final price} = 900 \times (1 - 0.10) = 900 \times 0.90 = \text{Rs. } \mathbf{810}$$

Why other options are wrong:

- Option A (Rs. 780): Applies combined 35% discount incorrectly ($1200 \times 0.65 = 780$).
- Option C (Rs. 840): Arithmetic error in second step.
- Option D (Rs. 860): Incorrect application of discounts.

Final Answer: Final selling price $= \text{Rs. } 810 \Rightarrow$ B

Answer: (B) Go Back to Q8

Q9.

Solution

Quick Solution: Concept: Combined Work Rate. **Chapter:** Time & Work. When multiple persons work together, their rates (fraction of work per day) are added. **Answer:** C.

Concept — Combined Work Rate: When multiple persons work together, their rates (fraction of work per day) are added.

Step 1 — Individual rates:

$$\text{A} = \frac{1}{20}, \quad \text{B} = \frac{1}{30}, \quad \text{C} = \frac{1}{60}$$

Step 2 — Combined rate (LCM of 20, 30, 60 = 60):

$$\frac{1}{20} + \frac{1}{30} + \frac{1}{60} = \frac{3}{60} + \frac{2}{60} + \frac{1}{60} = \frac{6}{60} = \frac{1}{10}$$

Step 3 — Days to complete:

$$\text{Days} = \frac{1}{1/10} = \textbf{10 days}$$

Final Answer: A, B, and C together complete the work in 10 days $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q9

Q10.

Solution

Quick Solution: Concept: Net Rate of Pipes. **Chapter:** Pipes & Cisterns. Inlet rate is positive; outlet rate is negative. **Answer:** D.

Concept — Net Rate of Pipes: Inlet rate is positive; outlet rate is negative. Net rate = inlet rate − outlet rate.

Step 1 — Individual rates per hour:

$$\text{Inlet rate} = \frac{1}{2}, \quad \text{Outlet rate} = \frac{1}{4}$$

Step 2 — Net filling rate per hour:

$$\frac{1}{2} - \frac{1}{4} = \frac{2}{4} - \frac{1}{4} = \frac{1}{4}$$

Interpretation: In 1 hour, $\frac{1}{4}$ of the tank is filled.

Why other options are wrong:

- Option A ($\frac{1}{2}$): Only considers the inlet pipe.
- Option B ($\frac{1}{3}$): Arithmetic error.
- Option C ($\frac{1}{6}$): Incorrect subtraction.

Final Answer: $\frac{1}{4}$ of the tank is filled in 1 hour $\Rightarrow$ D

Answer: (D) Go Back to Q10

Q11.

Solution

Quick Solution: Concept: Time-Speed-Distance with time difference. **Chapter:** Time & Distance. Same distance travelled at two speeds with different arrival times. **Answer:** A.

Concept — Time-Speed-Distance with time difference: Same distance travelled at two speeds with different arrival times.

Step 1 — Set up equation: Let d km be the distance. Time difference $= 10+8 = 18$ min $= \frac{18}{60} = \frac{3}{10}$ hr.

$$\frac{d}{4} - \frac{d}{5} = \frac{3}{10}$$

Step 2 — Solve:

$$d\left(\frac{1}{4} - \frac{1}{5}\right) = \frac{3}{10} \Rightarrow d \cdot \frac{1}{20} = \frac{3}{10} \Rightarrow d = \frac{3}{10} \times 20 = \mathbf{6}\text{ km}$$

Verification: At 4 km/h: $\frac{6}{4} = 1.5$ hr; at 5 km/h: $\frac{6}{5} = 1.2$ hr. Difference $= 0.3$ hr $= 18$ min ✓

Final Answer: Distance to station $= 6$ km $\Rightarrow$ A

Answer: (A) Go Back to Q11

Q12.

Solution

Quick Solution: Concept: Speed-Time Graph. **Chapter:** Time & Distance. The area under a speed-time graph gives the distance travelled. **Answer:** B.

Concept — Speed-Time Graph: The area under a speed-time graph gives the distance travelled. For uniform acceleration from rest, the graph is a straight line forming a triangle.

Step 1 — Convert speed:

$$90 \text{ km/h} = 90 \times \frac{1000}{3600} = 25 \text{ m/s}$$

Step 2 — Calculate distance (area of triangle):

$$d = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 30 \text{ s} \times 25 \text{ m/s} = \mathbf{375} \text{ m}$$

Why other options are wrong:

- Option A (300 m): Uses 20 m/s instead of 25 m/s.
- Option C (450 m): Does not halve (uses rectangle, not triangle).
- Option D (500 m): Incorrect conversion of speed.

Final Answer: Distance covered $= 375$ m $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q12

Q13.

Solution

Quick Solution: Concept: Simple Interest doubling time. **Chapter:** Simple Interest. For a principal P to double, SI must equal P. **Answer:** C.

Concept — Simple Interest doubling time: For a principal P to double, SI must equal P. Formula: SI $= \frac{P \times R \times T}{100}$.

Step 1 — Set SI equal to principal:

$$\text{SI} = P = 3600, \quad R = 6\%$$

$$3600 = \frac{3600 \times 6 \times T}{100}$$

Step 2 — Solve for T:

$$T = \frac{100}{6} = 16\frac{2}{3} \text{ years}$$

Alternative approach: At $R\%$ simple interest, doubling time $= \frac{100}{R}$ years $= \frac{100}{6} = 16\frac{2}{3}$ years.

Final Answer: Rs. 3,600 doubles in $16\frac{2}{3}$ years $\Rightarrow$ C

Answer: (C) Go Back to Q13

Q14.

Solution

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

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

Step 1 — Calculate Amount:

$$A = 10000 \times \left(1 + \frac{5}{100}\right)^2 = 10000 \times (1.05)^2 = 10000 \times 1.1025 = \text{Rs. } 11025$$

Step 2 — Calculate CI:

$$\text{CI} = 11025 - 10000 = \text{Rs. } \mathbf{1{,}025}$$

Why other options are wrong:

- Option A (Rs. 900): Simple interest for 2 years would be $10000 \times 5\% \times 2 =$ Rs. 1000, not 900.
- Option B (Rs. 950): Incorrect calculation.
- Option C (Rs. 975): Confuses with $P \times r$ for one year.

Final Answer: Compound Interest $=$ Rs. 1,025 $\Rightarrow$ D

Answer: (D) Go Back to Q14

Q15.

Solution

Quick Solution: Concept: Circle circumscribed around a square. **Chapter:** Mensuration 2D. The diagonal of the square equals the diameter of the circumscribed circle. **Answer:** A.

Concept — Circle circumscribed around a square: The diagonal of the square equals the diameter of the circumscribed circle.

Step 1 — Find the diagonal of the square:

$$\text{Diagonal} = \text{side} \times \sqrt{2} = 10\sqrt{2} \text{ cm}$$

Step 2 — Find the radius:

$$r = \frac{\text{diagonal}}{2} = \frac{10\sqrt{2}}{2} = 5\sqrt{2} \text{ cm}$$

Step 3 — Calculate area:

$$A = \pi r^2 = 3.14 \times (5\sqrt{2})^2 = 3.14 \times 50 = \mathbf{157} \text{ cm}^2$$

Final Answer: Area of circle $= 157$ cm$^2 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q15

Q16.

Solution

Quick Solution: Concept: Volume of a cone. **Chapter:** Mensuration 3D. $V = \frac{1}{3}\pi r^2 h$. **Answer:** B.

Concept — Volume of a cone: $V = \frac{1}{3}\pi r^2 h$.

Step 1 — Substitute values: $r = 7$ cm, $h = 24$ cm, $\pi = \frac{22}{7}$.

$$V = \frac{1}{3} \times \frac{22}{7} \times 7^2 \times 24 = \frac{1}{3} \times \frac{22}{7} \times 49 \times 24$$

Step 2 — Simplify:

$$V = \frac{1}{3} \times 22 \times 7 \times 24 = \frac{1}{3} \times 3696 = \mathbf{1{,}232} \text{ cm}^3$$

Why other options are wrong:

- Option A (1,154): Arithmetic error.
- Option C (1,296): Uses wrong formula or value.
- Option D (1,386): This is $\pi r^2 h$ without the $\frac{1}{3}$ factor, i.e., cylinder volume.

Final Answer: Volume of cone $= 1{,}232$ cm^3 $\Rightarrow$ B

Answer: (B) Go Back to Q16

Q17.

Solution

Quick Solution: Concept: Area of composite figures. **Chapter:** Mensuration Combined. Split the L-shape into simpler rectangles and add their areas. **Answer:** C.

Concept — Area of composite figures: Split the L-shape into simpler rectangles and add their areas.

Step 1 — Identify the two rectangles:

- Rectangle 1: 8 cm $\times$ 3 cm
- Rectangle 2: 4 cm $\times$ 5 cm

Step 2 — Calculate total area:

$$A = (8 \times 3) + (4 \times 5) = 24 + 20 = \mathbf{44}\ \mathbf{cm^2}$$

Why other options are wrong:

- Option A (38 cm^2): Misses 6 cm^2.
- Option B (40 cm^2): Arithmetic error in one rectangle.
- Option D (48 cm^2): Over-counts the overlapping region.

Final Answer: Total area $= 44$ cm^2 $\Rightarrow$ C

Answer: (C) Go Back to Q17

Q18.

Solution

Quick Solution: Concept: Classical Probability. **Chapter:** Probability. $P = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$. **Answer:** D.

Concept — Classical Probability: $P = \frac{\text{Favourable outcomes}}{\text{Total outcomes}}$. Two dice give $6 \times 6 = 36$ equally likely outcomes.

Step 1 — List favourable outcomes (sum = 7):

$$(1,6),\ (2,5),\ (3,4),\ (4,3),\ (5,2),\ (6,1) \quad \Rightarrow \quad 6 \text{ pairs}$$

Step 2 — Calculate probability:

$$P(\text{sum} = 7) = \frac{6}{36} = \mathbf{\frac{1}{6}}$$

Why other options are wrong:

- Option A ($\frac{1}{9}$): Counts only 4 pairs.
- Option B ($\frac{1}{8}$): Incorrect total.
- Option C ($\frac{1}{7}$): Counts only 5 or incorrect total.

Final Answer: $P(\text{sum} = 7) = \frac{1}{6} \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q18

Q19.

Solution

Quick Solution: Concept: Permutations without repetition. **Chapter:** Combinations. The number of ways to arrange r items chosen from n distinct items is $P(n,r) = \frac{n!}{(n-r)!}$. **Answer:** A.

Concept — Permutations without repetition: The number of ways to arrange r items chosen from n distinct items is $P(n,r) = \frac{n!}{(n-r)!}$.

Step 1 — Identify n and r: $n = 5$ digits $\{1,2,3,4,5\}$; $r = 3$ (3-digit number).

Step 2 — Calculate:

$$P(5,3) = 5 \times 4 \times 3 = \mathbf{60}$$

Reasoning: 5 choices for hundreds digit, 4 for tens digit (one used), 3 for units

digit (two used).

Why other options are wrong:

- Option B (45): $\binom{5}{3} \times 3 = 30$, not 45.
- Option C (72): Incorrect formula application.
- Option D (120): $5! = 120$ is for all 5-digit arrangements.

Final Answer: 60 three-digit numbers can be formed $\Rightarrow$ A

Answer: (A) Go Back to Q19

Q20.

Solution

Quick Solution: Concept: Correcting a wrong average. **Chapter:** Averages. Find the error in sum and recalculate the average. **Answer:** B.

Concept — Correcting a wrong average: Find the error in sum and recalculate the average.

Step 1 — Find the incorrect sum:

$$\text{Incorrect sum} = 10 \times 15 = 150$$

Step 2 — Correct the sum: Replace 14 with 56.

$$\text{Correct sum} = 150 - 14 + 56 = 150 + 42 = 192$$

Step 3 — Calculate correct average:

$$\text{Correct average} = \frac{192}{10} = \mathbf{19.2}$$

Why other options are wrong:

- Option A (17.2): Adds 22 instead of 42.
- Option C (18.6): Confuses this with the 26/62 variant.
- Option D (20.4): Over-corrects.

Final Answer: Correct average $= 19.2 \Rightarrow$ B

Answer: (B) Go Back to Q20

Q21.

Solution

Quick Solution: Concept: Required score to raise average. **Chapter:** Averages. New total required = new average × new number of innings. **Answer:** C.

Concept — Required score to raise average: New total required = new average × new number of innings.

Step 1 — Current total runs:

$$\text{Current total} = 30 \times 55 = 1650 \text{ runs}$$

Step 2 — Required total for new average:

$$\text{Required total} = 31 \times 56 = 1736 \text{ runs}$$

Step 3 — Runs needed in next innings:

$$\text{Runs needed} = 1736 - 1650 = \mathbf{86}$$

Why other options are wrong:

- Option A (80): $1650 + 80 = 1730$; avg $= 1730/31 \approx 55.8 \neq 56$.
- Option B (82): $1650 + 82 = 1732$; avg $\approx 55.87 \neq 56$.
- Option D (90): $1650 + 90 = 1740$; avg $\approx 56.13 \neq 56$.

Final Answer: The batsman must score 86 runs $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q21

Q22.

Solution

Quick Solution: Concept: Fibonacci Series. **Chapter:** Analytical — Series. Each term is the sum of the two preceding terms: $F_n = F_{n-1} + F_{n-2}$. **Answer:** D.

Concept — Fibonacci Series: Each term is the sum of the two preceding terms: $F_n = F_{n-1} + F_{n-2}$.

Step 1 — Verify the pattern:

$$1, 1, 2, 3, 5, 8, 13, \ldots$$

$$1+1=2, \quad 1+2=3, \quad 2+3=5, \quad 3+5=8, \quad 5+8=13$$

Step 2 — Find the next term:

$$8+13=\mathbf{21}$$

Why other options are wrong:

- Option A (18): $13+5=18$ (skips a term).
- Option B (19): No pattern basis.
- Option C (20): Off by one from correct answer.

Final Answer: Next term $=21 \Rightarrow$ D

Answer: (D) Go Back to Q22

Q23.

Solution

Quick Solution: Concept: Letter-Position Coding. **Chapter:** Coding-Decoding. Each letter is assigned its position in the alphabet (A=1, B=2, C=3, ...), and the code is the sum of positions. **Answer:** A.

Concept — Letter-Position Coding: Each letter is assigned its position in the alphabet (A=1, B=2, C=3, ...), and the code is the sum of positions.

Step 1 — Verify with BAD:

$$B=2, \quad A=1, \quad D=4 \quad \Rightarrow \quad 2+1+4=7\checkmark$$

Step 2 — Apply to ACE:

$$A=1, \quad C=3, \quad E=5 \quad \Rightarrow \quad 1+3+5=\mathbf{9}$$

Why other options are wrong:

- Option B (8): Counts C=2 (incorrect; C is the 3rd letter).
- Option C (10): Off by one error on E.
- Option D (12): Applies a different coding rule.

Final Answer: ACE $=9 \Rightarrow$ A

Answer: (A) Go Back to Q23

Q24.

Solution

Quick Solution: Concept: Blood Relations. **Chapter:** Blood Relations. Trace the relationship step by step using a family tree. **Answer:** B.

Concept — Blood Relations: Trace the relationship step by step using a family tree.

Step 1 — Trace A's side: A's brother's father = A's father (since A's brother and A share the same father).

Step 2 — Trace B's side: B's mother's husband = B's father.

Step 3 — Connect: A's father = B's father. Hence A and B have the same father $\Rightarrow$ they are **siblings**.

Why other options are wrong:

- Option A (Father): A's father is B's father, not B himself.
- Option C (Cousin): Cousins have different parents.
- Option D (Uncle): No generational difference established.

Final Answer: B is A's sibling (brother or sister) $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q24

Q25.

Solution

Quick Solution: Concept: Direction Sense and Displacement. **Chapter:** Direction Sense. Track net displacement in each direction (East-West and North-South). **Answer:** C.

Concept — Direction Sense and Displacement: Track net displacement in each direction (East-West and North-South).

Step 1 — Track movements:

- 10 m East $\Rightarrow$ East total: 10 m
- 5 m North $\Rightarrow$ North total: 5 m
- 10 m East $\Rightarrow$ East total: 20 m
- 5 m South $\Rightarrow$ South total: 5 m

Step 2 — Net displacement:

$$\text{Net East} = 20 \text{ m}, \quad \text{Net North} = 5 - 5 = 0 \text{ m}$$

Step 3 — Final displacement:

$$d = \sqrt{20^2 + 0^2} = \sqrt{400} = \mathbf{20} \text{ m East}$$

Why other options are wrong:

- Option A (10 m): Only counts one of the two eastward segments.
- Option B (15 m): Arithmetic error.
- Option D (25 m): Does not cancel the N/S movements.

Final Answer: Final displacement $= 20$ m East $\Rightarrow$ C

Answer: (C) Go Back to Q25

Answer Key

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