IBSAT Quantitative Aptitude

Sample Paper – 5

Duration: 26 Minutes **Maximum Marks: 30**

Instructions

- This paper contains **30** Multiple Choice Questions (Single Correct Answer), modelled on the Quantitative Aptitude section of **IBSAT** (ICFAI Business School Aptitude Test).
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers, so attempt every question.
- Only **one** option is correct. Choose the most appropriate answer.
- IBSAT is a computer-based test with no sectional time limit; attempt this practice paper in one timed sitting of about **26 minutes**.
- Use of mobile phones, calculators, log tables, or electronic gadgets is strictly prohibited.

Part A: Arithmetic

Q1. In a batch of 750 machine parts, 30 parts are found to be defective. What percentage of the batch is defective?

(A) 3%

(B) 5%

(C) 4%

(D) 6%

Q2. An article marked at Rs. 1200 is sold after allowing a discount of 10% on the marked price. If the article was bought for Rs. 900, what is the profit percent?

(A) 20%

(B) 15%

(C) 25%

(D) 18%

Q3. If $8 : 12 = 10 : x$, what is the value of x?

(A) 12

(B) 15

(C) 14

(D) 16

Q4. In a class, 20 boys score an average of 60 marks and 30 girls score an average of 70 marks. What is the average score of the whole class?

(A) 64

(B) 65

(C) 68

(D) 66

Q5. Find the difference between the simple interest on Rs. 8000 at 12% per annum for 2 years and the simple interest on the same sum at 10% per annum for 2 years.

(A) Rs. 320

(B) Rs. 300

(C) Rs. 160

(D) Rs. 640

Q6. Find the compound interest on Rs. 10000 at 20% per annum for 1 year, compounded half-yearly.

(A) Rs. 2000

(B) Rs. 2200

(C) Rs. 2400

(D) Rs. 2100

Q7. A milkman mixes 5 litres of water with 20 litres of milk that costs Rs. 40 per litre. He sells the whole mixture at Rs. 40 per litre. What is his profit percent?

(A) 20%

(B) 25%

(C) 30%

(D) 22%

Q8. A and B start a business with capitals of Rs. 20000 and Rs. 30000. A, being the working partner, receives 10% of the profit as salary, and the remaining profit is divided in the ratio of their capitals. If the total profit is Rs. 10000, what is A's total share?

(A) Rs. 4000

(B) Rs. 5000

(C) Rs. 4600

(D) Rs. 4400

Q9. What single discount is equivalent to two successive discounts of 20% and 10%?

(A) 28%

(B) 30%

(C) 25%

(D) 27%

Q10. A bacterial culture increases at the rate of 10% every hour. If the culture starts with 5000 bacteria, how many bacteria will there be after 2 hours?

(A) 6000

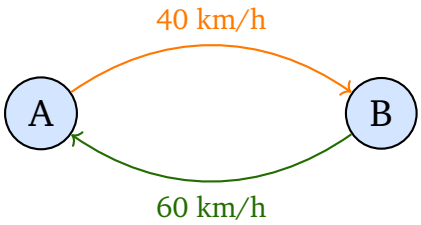
(B) 6100

(C) 5500

(D) 6050

Part B: Speed, Time and Work

Q11. A man travels from town A to town B at a speed of 40 km/h and returns along the same road at a speed of 60 km/h. What is his average speed for the whole round trip?



(A) 50 km/h

(B) 48 km/h

(C) 45 km/h

(D) 52 km/h

Q12. The speed of a boat in still water is 9 km/h and the speed of the stream is 3 km/h. The boat travels 36 km downstream and then returns the same 36 km upstream. What is the total time taken for the round trip?

(A) 6 hours

(B) 7.5 hours

(C) 9 hours

(D) 10 hours

Q13. A is twice as efficient as B. Working together, they complete a piece of work in 8 days. In how many days will B alone complete the work?

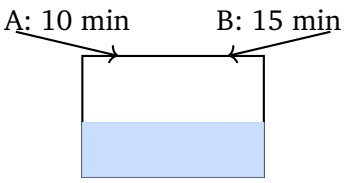
(A) 24

(B) 16

(C) 12

(D) 20

Q14. Pipe A can fill a tank in 10 minutes and pipe B can fill it in 15 minutes. Both pipes are opened together, but pipe A is closed after 4 minutes. In how much total time is the tank filled?



A closed after 4 min

(A) 7 minutes

(B) 8 minutes

(C) 10 minutes

(D) 9 minutes

Part C: Number System

Q15. What is the smallest three-digit number that leaves a remainder of 2 when divided by 8?

(A) 102

(B) 104

(C) 106

(D) 100

Q16. Find the least number which, when divided by 8, 12 and 16, leaves a remainder of 5 in each case.

(A) 53

(B) 48

(C) 55

(D) 58

Q17. What is the unit digit of $3^{47} + 7^{52}$?

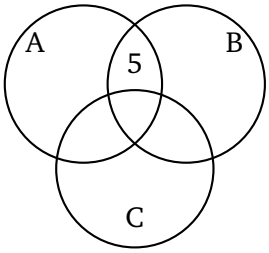
(A) 6

(B) 8

(C) 4

(D) 0

Q18. In a survey of readers, 15 read both A and B, 12 read both B and C, 10 read both A and C, and 5 read all three of A, B and C. How many people read at least two of the three?



(A) 22

(B) 25

(C) 32

(D) 27

Part D: Algebra

Q19. A bag contains only Rs. 5 and Rs. 2 coins. There are 25 coins in all and their total value is Rs. 89. How many Rs. 5 coins are there?

(A) 11

(B) 12

(C) 13

(D) 15

Q20. One root of the quadratic equation $x^2 + kx + 12 = 0$ is 3. What is the other root?

(A) 4

(B) 3

(C) 6

(D) 12

Q21. What is the greatest integer value of x that satisfies the inequality $3x-7 < 11$?

(A) 4

(B) 5

(C) 6

(D) 3

Q22. Logs are stacked so that the top row has 1 log, the next row has 2 logs, the next has 3 logs, and so on, up to a bottom row of 20 logs. How many logs are there in the stack in all?

(A) 190

(B) 200

(C) 220

(D) 210

Q23. What is the geometric mean of 4 and 16?

(A) 10

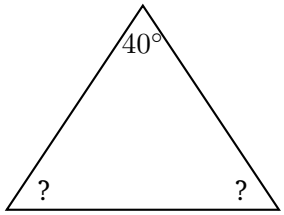
(B) 6

(C) 8

(D) 12

Part E: Geometry and Mensuration

Q24. In an isosceles triangle, the vertex (apex) angle is $40°$. What is the measure of each of the two equal base angles?



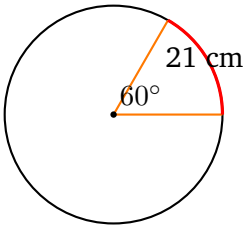
(A) 70°

(B) 40°

(C) 100°

(D) 55°

Q25. Find the length of an arc that subtends an angle of 60° at the centre of a circle of radius 21 cm. (Take $\pi = \frac{22}{7}$.)



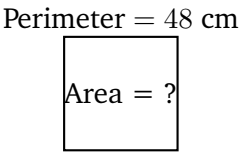
(A) 11 cm

(B) 22 cm

(C) 44 cm

(D) 33 cm

Q26. The perimeter of a square is 48 cm. What is its area?



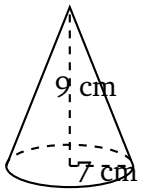
(A) 96 cm^2

(B) 108 cm^2

(C) 121 cm^2

(D) 144 cm^2

Q27. Find the volume of a cone whose base radius is 7 cm and height is 9 cm. (Take $\pi = \frac{22}{7}$.)



(A) 154 cm^3

(B) 396 cm^3

(C) 462 cm^3

(D) 924 cm^3

Part F: Permutation, Combination and Probability

Q28. In how many different ways can 5 different books be arranged in a row on a shelf?

(A) 60

(B) 120

(C) 24

(D) 720

Q29. A committee of 2 men and 1 woman is to be formed from a group of 4 men and 3 women. In how many ways can this be done?

(A) 18

(B) 12

(C) 24

(D) 9

Q30. Two fair dice are rolled together. What is the probability that the sum of the numbers on the two dice is 7?

(A) $\frac{1}{12}$

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

(C) $\frac{5}{36}$

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

Detailed Solutions

Q1.

Solution

Concept — Percentage: A part written as a percentage of the whole is the fraction $\frac{\text{part}}{\text{whole}}$ multiplied by 100.

Step 1 — Write the defective fraction:

$$\frac{\text{defective}}{\text{total}} = \frac{30}{750}.$$

Step 2 — Simplify the fraction:

$$\frac{30}{750} = \frac{1}{25}.$$

Step 3 — Convert to a percentage:

$$\frac{1}{25} \times 100 = 4\%.$$

Why other options are wrong:

- Option A: 3% corresponds to about 22 or 23 defective parts.
- Option B: 5% corresponds to 37.5 parts, not 30.
- Option D: 6% corresponds to 45 defective parts.

Final Answer: Defective percentage $= \frac{30}{750} \times 100 = 4\% \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q1

Q2.

Solution

Concept — Discount and Profit: Selling price = marked price − discount; profit% $= \frac{\text{SP} - \text{CP}}{\text{CP}} \times 100$.

Step 1 — Find the discount amount:

$$10\% \text{ of } 1200 = \frac{10}{100} \times 1200 = 120.$$

Step 2 — Find the selling price:

$$\text{SP} = 1200 - 120 = 1080.$$

Step 3 — Find the profit:

$$\text{Profit} = 1080 - 900 = 180.$$

Step 4 — Convert to profit percent:

$$\frac{180}{900} \times 100 = 20\%.$$

Why other options are wrong:

- Option B: 15% uses a selling price of Rs. 1035.
- Option C: 25% ignores the discount and uses the full marked price.
- Option D: 18% uses the wrong cost base.

Final Answer: Profit percent $= \frac{180}{900} \times 100 = 20\% \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q2

Q3.

Solution

Concept — Proportion: In a proportion $a : b = c : x$, the product of the extremes equals the product of the means, so $a \times x = b \times c$.

Step 1 — Write the cross-multiplication:

$$8 \times x = 12 \times 10.$$

Step 2 — Multiply the known side:

$$8x = 120.$$

Step 3 — Solve for x:

$$x = \frac{120}{8} = 15.$$

Why other options are wrong:

- Option A: 12 makes the two ratios unequal.
- Option C: 14 gives $8 \times 14 = 112$, not 120.
- Option D: 16 gives $8 \times 16 = 128$, not 120.

Final Answer: $x = \frac{12 \times 10}{8} = 15 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q3

Q4.

Solution

Concept — Weighted Average: The combined average is the total of all values divided by the total count of members.

Step 1 — Total marks of the boys:

$$20 \times 60 = 1200.$$

Step 2 — Total marks of the girls:

$$30 \times 70 = 2100.$$

Step 3 — Grand total and total count:

$$1200 + 2100 = 3300, \qquad 20 + 30 = 50.$$

Step 4 — Combined average:

$$\frac{3300}{50} = 66.$$

Why other options are wrong:

- Option A: 64 weights the groups incorrectly.
- Option B: 65 is the simple average of 60 and 70, ignoring group sizes.
- Option C: 68 over-weights the girls.

Final Answer: Class average $= \frac{3300}{50} = 66 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q4

Q5.

Solution

Concept — Simple Interest: SI $= \dfrac{P \times R \times T}{100}$; the difference is found by computing each interest and subtracting.

Step 1 — Interest at 12% for 2 years:

$$\frac{8000 \times 12 \times 2}{100} = 1920.$$

Step 2 — Interest at 10% for 2 years:

$$\frac{8000 \times 10 \times 2}{100} = 1600.$$

Step 3 — Take the difference:

$$1920 - 1600 = 320.$$

Why other options are wrong:

- Option B: Rs. 300 rounds the rates incorrectly.
- Option C: Rs. 160 uses only 1 year instead of 2.
- Option D: Rs. 640 doubles the correct difference.

Final Answer: Difference $= 1920 - 1600 =$ Rs. 320 $\Rightarrow$ A

Answer: (A) Go Back to Q5

Q6.

Solution

Concept — Compound Interest (Half-Yearly): When compounded half-yearly, the rate per period is halved and the number of periods is doubled.

Step 1 — Rate and periods for half-yearly compounding:

$$\text{Rate per half-year} = \frac{20}{2} = 10\%, \qquad \text{Periods} = 2.$$

Step 2 — Write the growth factor:

$$1 + \frac{10}{100} = 1.1.$$

Step 3 — Find the amount:

$$10000 \times (1.1)^2 = 10000 \times 1.21 = 12100.$$

Step 4 — Subtract the principal:

$$12100 - 10000 = 2100.$$

Why other options are wrong:

- Option A: Rs. 2000 is the simple interest at 20% for 1 year.
- Option B: Rs. 2200 has no valid basis here.
- Option C: Rs. 2400 overstates the compounding effect.

Final Answer: CI $= 12100 - 10000 =$ Rs. 2100 $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q6

Q7.

Solution

Concept — Mixtures and Profit: Water added free reduces the cost per litre; $\text{profit\%} = \dfrac{\text{selling value} - \text{cost}}{\text{cost}} \times 100.$

Step 1 — Cost of the milk used:

$$20 \times 40 = 800.$$

Step 2 — Total volume of the mixture:

$$20 + 5 = 25 \text{ litres}.$$

Step 3 — Selling value of the mixture:

$$25 \times 40 = 1000.$$

Step 4 — Profit and profit percent:

$$\text{Profit} = 1000 - 800 = 200, \qquad \frac{200}{800} \times 100 = 25\%.$$

Why other options are wrong:

- Option A: 20% divides the profit by the selling value, not the cost.
- Option C: 30% overstates the added water.
- Option D: 22% has no valid basis here.

Final Answer: Profit percent $= \frac{200}{800} \times 100 = 25\% \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q7

Q8.

Solution

Concept — Partnership with Salary: First set aside the working partner's salary, then divide the remaining profit in the ratio of capitals.

Step 1 — Salary paid to A:

$$10\% \text{ of } 10000 = \frac{10}{100} \times 10000 = 1000.$$

Step 2 — Profit left to divide:

$$10000 - 1000 = 9000.$$

Step 3 — Ratio of capitals:

$$20000 : 30000 = 2 : 3, \text{ so } 2 + 3 = 5 \text{ parts.}$$

Step 4 — A's share of the remaining profit:

$$\frac{2}{5} \times 9000 = 3600.$$

Step 5 — A's total share:

$$1000 + 3600 = 4600.$$

Why other options are wrong:

- Option A: Rs. 4000 forgets to add the salary.
- Option B: Rs. 5000 splits the whole profit equally.
- Option D: Rs. 4400 uses the wrong capital ratio.

Final Answer: A's total share $= 1000 + 3600 =$ Rs. 4600 $\Rightarrow$ C

Answer: (C) Go Back to Q8

Q9.

Solution

Concept — Successive Discounts: Apply each discount as a multiplying factor, then read off the total reduction from the original price.

Step 1 — Take the marked price as 100.

Step 2 — Apply the first discount of 20%:

$$100 \times 0.80 = 80.$$

Step 3 — Apply the second discount of 10% on the new value:

$$80 \times 0.90 = 72.$$

Step 4 — Find the single equivalent discount:

$$100 - 72 = 28 \;\Rightarrow\; 28\%.$$

Why other options are wrong:

- Option B: 30% simply adds $20+10$, ignoring that the second acts on a smaller base.
- Option C: 25% understates the total reduction.
- Option D: 27% has no valid basis here.

Final Answer: Single equivalent discount $= 100 - 72 = 28\% \Rightarrow$ A

Answer: (A) Go Back to Q9

Q10.

Solution

Concept — Growth at a Fixed Rate: A quantity growing at a fixed rate each hour follows $P\left(1+\frac{R}{100}\right)^{T}$.

Step 1 — Write the hourly growth factor:

$$1 + \frac{10}{100} = 1.1.$$

Step 2 — Apply it for 2 hours:

$$5000 \times (1.1)^2 = 5000 \times 1.21.$$

Step 3 — Compute the product:

$$5000 \times 1.21 = 6050.$$

Why other options are wrong:

- Option A: 6000 adds a flat 20% without compounding.
- Option B: 6100 has no valid basis here.
- Option C: 5500 adds only one hour's growth.

Final Answer: Bacteria after 2 hours $= 5000 \times 1.21 = 6050 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q10

Q11.

Solution

Concept — Average Speed: For equal distances covered at two speeds, the average speed is the harmonic mean $\frac{2\,v_1 v_2}{v_1 + v_2}$.

Step 1 — Substitute the two speeds:

$$\frac{2 \times 40 \times 60}{40 + 60}.$$

Step 2 — Simplify the numerator and denominator:

$$\frac{4800}{100}.$$

Step 3 — Divide:

$$\frac{4800}{100} = 48 \text{ km/h}.$$

Why other options are wrong:

- Option A: 50 km/h is the plain average of 40 and 60, which is wrong for equal distances.
- Option C: 45 km/h understates the average.
- Option D: 52 km/h over-weights the faster leg.

Final Answer: Average speed $= \frac{2\times40\times60}{100} = 48$ km/h $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q11

Q12.

Solution

Concept — Boats and Streams: Downstream speed = boat + stream; upstream speed = boat − stream; total time is the sum of the two leg times.

Step 1 — Downstream and upstream speeds:

$$\text{Down} = 9 + 3 = 12, \qquad \text{Up} = 9 - 3 = 6.$$

Step 2 — Time downstream:

$$\frac{36}{12} = 3 \text{ hours}.$$

Step 3 — Time upstream:

$$\frac{36}{6} = 6 \text{ hours}.$$

Step 4 — Add the two leg times:

$$3 + 6 = 9 \text{ hours}.$$

Why other options are wrong:

- Option A: 6 hours uses the same speed both ways.
- Option B: 7.5 hours averages the times incorrectly.
- Option D: 10 hours uses the upstream speed for both legs.

Final Answer: Total time $= 3 + 6 = 9$ hours $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q12

Q13.

Solution

Concept — Efficiency Ratio: If A is twice as efficient as B, then in one day A does twice the work of B; add the daily efficiencies to model working together.

Step 1 — Assign efficiency units:

$$B = 1 \text{ unit/day}, \qquad A = 2 \text{ units/day}.$$

Step 2 — Combined daily work:

$$2 + 1 = 3 \text{ units/day}.$$

Step 3 — Total work done in 8 days together:

$$3 \times 8 = 24 \text{ units}.$$

Step 4 — Time for B alone at 1 unit/day:

$$\frac{24}{1} = 24 \text{ days}.$$

Why other options are wrong:

- Option B: 16 days uses B doing 1.5 units/day.
- Option C: 12 days is the time for A alone, not B.
- Option D: 20 days has no valid basis here.

Final Answer: B alone finishes in $\frac{24}{1} = 24$ days $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q13

Q14.

Solution

Concept — Pipes with One Closed: Add both pipes' rates for the shared time, then let the remaining pipe finish the rest of the tank.

Step 1 — Per-minute rates:

$$A = \frac{1}{10}, \qquad B = \frac{1}{15}.$$

Step 2 — Work done in the first 4 minutes (both open):

$$4\left(\frac{1}{10}+\frac{1}{15}\right)=4\left(\frac{3}{30}+\frac{2}{30}\right)=4\times\frac{5}{30}=\frac{2}{3}.$$

Step 3 — Remaining part of the tank:

$$1-\frac{2}{3}=\frac{1}{3}.$$

Step 4 — Time for B alone to fill the remaining $\frac{1}{3}$:

$$\frac{1}{3}\div\frac{1}{15}=\frac{1}{3}\times 15=5 \text{ minutes}.$$

Step 5 — Total time:

$$4+5=9 \text{ minutes}.$$

Why other options are wrong:

- Option A: 7 minutes ignores that A stops early.
- Option B: 8 minutes understates B's remaining work.
- Option C: 10 minutes over-counts the remaining time.

Final Answer: Total time $=4+5=9$ minutes $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q14

Q15.

Solution

Concept — Remainders: A number leaving remainder r on division by d has the form $d\times q+r$; test from the smallest three-digit number upward.

Step 1 — Divide 100 by 8:

$$100=8\times 12+4, \text{ remainder } 4.$$

Step 2 — Numbers of the form $8q+2$ near 100:

$$8\times 12+2=98 \text{ (two-digit)}, \qquad 8\times 13+2=106.$$

Step 3 — The smallest three-digit such number:

$$106.$$

Why other options are wrong:

- Option A: 102 leaves remainder 6 when divided by 8.
- Option B: 104 leaves remainder 0.
- Option D: 100 leaves remainder 4.

Final Answer: The required number is 106 $\Rightarrow$ C

Answer: (C) Go Back to Q15

Q16.

Solution

Concept — Same Remainder with Several Divisors: The least such number is the LCM of the divisors plus the common remainder.

Step 1 — Find the LCM of 8, 12 and 16:

$$\text{LCM}(8, 12, 16) = 48.$$

Step 2 — Add the common remainder 5:

$$48 + 5 = 53.$$

Step 3 — Verify the remainder for each divisor:

$$53 = 8 \times 6 + 5 = 12 \times 4 + 5 = 16 \times 3 + 5.$$

Why other options are wrong:

- Option B: 48 is the LCM but leaves remainder 0, not 5.
- Option C: 55 leaves remainder 7 when divided by 8.
- Option D: 58 leaves remainder 2 when divided by 8.

Final Answer: Least number $= 48 + 5 = 53 \Rightarrow$ A

Answer: (A) Go Back to Q16

Q17.

Solution

Concept — Unit Digit of a Sum: Find the unit digit of each power using its cycle of length 4, then add the two unit digits.

Step 1 — Cycle of unit digits of 3:

$$3, 9, 7, 1 \text{ (length 4)}; \; 47 \div 4 = 11 \text{ r } 3 \;\Rightarrow\; \text{unit digit } 7.$$

Step 2 — Cycle of unit digits of 7:

$$7, 9, 3, 1 \text{ (length 4)}; \; 52 \div 4 = 13 \text{ r } 0 \;\Rightarrow\; \text{unit digit } 1.$$

Step 3 — Add the two unit digits:

$$7 + 1 = 8.$$

Why other options are wrong:

- Option A: 6 misreads one of the cycles.
- Option C: 4 uses the wrong position for 3^{47}.
- Option D: 0 would need the digits to sum to 10.

Final Answer: Unit digit $= 7 + 1 = 8 \Rightarrow$ B

Answer: (B) Go Back to Q17

Q18.

Solution

Concept — Sets (At Least Two): People in at least two sets = (sum of the three pairwise overlaps) $-\, 2\times$(those in all three).

Step 1 — Add the three pairwise overlaps:

$$15 + 12 + 10 = 37.$$

Step 2 — The all-three group is counted three times in that sum but should count once, so subtract it twice:

$$37 - 2 \times 5 = 37 - 10.$$

Step 3 — Compute:

$$37 - 10 = 27.$$

Why other options are wrong:

- Option A: 22 subtracts the all-three group three times.
- Option B: 25 subtracts an incorrect amount.
- Option C: 32 subtracts the all-three group only once.

Final Answer: At least two $= 37 - 10 = 27 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q18

Q19.

Solution

Concept — Linear Equations (Coins): Set up one equation for the number of coins and one for their total value, then solve.

Step 1 — Let x be the number of Rs. 5 coins; then Rs. 2 coins $= 25 - x$:

$$x + (25 - x) = 25 \checkmark.$$

Step 2 — Write the value equation:

$$5x + 2(25 - x) = 89.$$

Step 3 — Expand and simplify:

$$5x + 50 - 2x = 89 \;\Rightarrow\; 3x + 50 = 89.$$

Step 4 — Solve for x:

$$3x = 39 \;\Rightarrow\; x = 13.$$

Why other options are wrong:

- Option A: 11 gives a total value of Rs. 83.
- Option B: 12 gives a total value of Rs. 86.
- Option D: 15 gives a total value of Rs. 95.

Final Answer: Number of Rs. 5 coins $= 13 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q19

Q20.

Solution

Concept — Roots of a Quadratic: For $x^2 + bx + c = 0$, the product of the roots equals c (since the leading coefficient is 1).

Step 1 — Product of the roots equals the constant term:

$$(\text{root}_1)(\text{root}_2) = 12.$$

Step 2 — Substitute the known root 3:

$$3 \times (\text{other root}) = 12.$$

Step 3 — Solve for the other root:

$$\text{other root} = \frac{12}{3} = 4.$$

Why other options are wrong:

- Option B: 3 repeats the given root, giving a product of 9, not 12.
- Option C: 6 gives a product of 18.
- Option D: 12 gives a product of 36.

Final Answer: Other root $= \frac{12}{3} = 4 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q20

Q21.

Solution

Concept — Linear Inequalities: Solve for x, then pick the largest integer below the boundary value.

Step 1 — Add 7 to both sides:

$$3x < 18.$$

Step 2 — Divide both sides by 3:

$$x < 6.$$

Step 3 — Largest integer strictly less than 6:

$$x = 5.$$

Why other options are wrong:

- Option A: 4 is not the greatest such integer.
- Option C: 6 gives $3x - 7 = 11$, which is not less than 11.
- Option D: 3 is far below the boundary.

Final Answer: Greatest integer is $x = 5 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q21

Q22.

Solution

Concept — Sum of First n Natural Numbers: The total $1 + 2 + \cdots + n$ equals $\dfrac{n(n+1)}{2}$.

Step 1 — Identify n from the bottom row:

$$n = 20.$$

Step 2 — Apply the sum formula:

$$\frac{20 \times 21}{2}.$$

Step 3 — Compute:

$$\frac{420}{2} = 210.$$

Why other options are wrong:

- Option A: 190 is the sum for $n = 19$.
- Option B: 200 has no valid basis here.
- Option C: 220 is the sum for $n = 21$ minus one term, computed wrongly.

Final Answer: Total logs $= \frac{20 \times 21}{2} = 210 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q22

Q23.

Solution

Concept — Geometric Mean: The geometric mean of two numbers a and b is $\sqrt{a\,b}$.

Step 1 — Multiply the two numbers:

$$4 \times 16 = 64.$$

Step 2 — Take the square root:

$$\sqrt{64} = 8.$$

Why other options are wrong:

- Option A: 10 is the arithmetic mean of 4 and 16, not the geometric mean.
- Option B: 6 is too small; $6^2 = 36 \neq 64$.
- Option D: 12 gives $12^2 = 144$, not 64.

Final Answer: Geometric mean $= \sqrt{4 \times 16} = 8 \Rightarrow$ C

Answer: (C) Go Back to Q23

Q24.

Solution

Concept — Isosceles Triangle: The two base angles are equal, and all three angles of a triangle add up to $180°$.

Step 1 — Subtract the vertex angle from $180°$:

$$180° - 40° = 140°.$$

Step 2 — The two equal base angles share this amount:

$$\frac{140°}{2} = 70°.$$

Why other options are wrong:

- Option B: $40°$ repeats the vertex angle.
- Option C: $100°$ would make the angle sum exceed $180°$.

- Option D: 55° does not close the triangle to 180°.

Final Answer: Each base angle $= \frac{140^\circ}{2} = 70^\circ \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q24

Q25.

Solution

Concept — Arc Length: An arc that subtends angle θ at the centre has length $\frac{\theta}{360^\circ} \times 2\pi r$.

Step 1 — Write the fraction of the full circle:

$$\frac{60}{360} = \frac{1}{6}.$$

Step 2 — Find the full circumference:

$$2 \times \frac{22}{7} \times 21 = 2 \times 22 \times 3 = 132 \text{ cm}.$$

Step 3 — Take one-sixth of the circumference:

$$\frac{1}{6} \times 132 = 22 \text{ cm}.$$

Why other options are wrong:

- Option A: 11 cm uses a 30° arc.
- Option C: 44 cm uses a 120° arc.
- Option D: 33 cm uses a 90° arc.

Final Answer: Arc length $= \frac{1}{6} \times 132 = 22$ cm $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q25

Q26.

Solution

Concept — Square from Perimeter: A square has four equal sides, so side $= \frac{\text{perimeter}}{4}$, and area $= \text{side}^2$.

Step 1 — Find the side length:

$$\frac{48}{4} = 12 \text{ cm}.$$

Step 2 — Square the side to get the area:

$$12^2 = 144 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 96 cm^2 multiplies the perimeter by 2.
- Option B: 108 cm^2 has no valid basis here.
- Option C: 121 cm^2 uses a side of 11 cm.

Final Answer: Area $= 12^2 = 144 \text{ cm}^2 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q26

Q27.

Solution

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

Step 1 — Square the radius:

$$7^2 = 49.$$

Step 2 — Substitute into the formula:

$$\frac{1}{3} \times \frac{22}{7} \times 49 \times 9.$$

Step 3 — Simplify $\frac{22}{7} \times 49$:

$$\frac{22}{7} \times 49 = 22 \times 7 = 154.$$

Step 4 — Multiply by height and divide by 3:

$$\frac{1}{3} \times 154 \times 9 = 154 \times 3 = 462 \text{ cm}^3.$$

Why other options are wrong:

- Option A: 154 cm^3 forgets the height factor.
- Option B: 396 cm^3 uses the wrong radius.
- Option D: 924 cm^3 omits the $\frac{1}{3}$ factor of a cone.

Final Answer: Volume $= \frac{1}{3} \times \frac{22}{7} \times 49 \times 9 = 462$ $\text{cm}^3 \Rightarrow$ C

Answer: (C) Go Back to Q27

Q28.

Solution

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

Step 1 — Count the distinct books:

$$n = 5.$$

Step 2 — Write out $5!$:

$$5! = 5 \times 4 \times 3 \times 2 \times 1.$$

Step 3 — Compute step by step:

$$5 \times 4 = 20, \quad 20 \times 3 = 60, \quad 60 \times 2 = 120, \quad 120 \times 1 = 120.$$

Why other options are wrong:

- Option A: 60 uses only $5 \times 4 \times 3$.
- Option C: 24 is $4!$, one book too few.
- Option D: 720 is $6!$, one book too many.

Final Answer: Number of arrangements $= 5! = 120 \Rightarrow$ B

Answer: (B) Go Back to Q28

Q29.

Solution

Concept — Combinations from Two Groups: Choose independently from each group and multiply the counts, since every men-choice pairs with every women-choice.

Step 1 — Ways to choose 2 men from 4:

$$\binom{4}{2} = \frac{4 \times 3}{2 \times 1} = 6.$$

Step 2 — Ways to choose 1 woman from 3:

$$\binom{3}{1} = 3.$$

Step 3 — Multiply the two independent choices:

$$6 \times 3 = 18.$$

Why other options are wrong:

- Option B: 12 uses $\binom{4}{2} = 6$ times 2 by mistake.
- Option C: 24 double-counts arrangements of the men.
- Option D: 9 uses only one man in the count.

Final Answer: Number of committees $= 6 \times 3 = 18 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q29

Q30.

Solution

Concept — Probability with Two Dice: Probability $= \dfrac{\text{favourable outcomes}}{\text{total outcomes}}$; two dice give $6 \times 6 = 36$ equally likely outcomes.

Step 1 — Total number of outcomes:

$$6 \times 6 = 36.$$

Step 2 — List the outcomes with sum 7:

$$(1,6), (2,5), (3,4), (4,3), (5,2), (6,1) \;\Rightarrow\; 6 \text{ outcomes.}$$

Step 3 — Form and simplify the probability:

$$\frac{6}{36} = \frac{1}{6}.$$

Why other options are wrong:

- Option A: $\frac{1}{12}$ counts only 3 favourable outcomes.
- Option B: $\frac{1}{9}$ counts 4 favourable outcomes.
- Option C: $\frac{5}{36}$ counts 5 favourable outcomes (a sum of 6 or 8, not 7).

Final Answer: $P(\text{sum} = 7) = \frac{6}{36} = \frac{1}{6} \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q30

Answer Key

IBSAT Quantitative Aptitude – Sample Paper 5									
Q	**Ans**	**Q**	**Ans**	**Q**	**Ans**	**Q**	**Ans**	**Q**	**Ans**
1	C	2	A	3	B	4	D	5	A
6	D	7	B	8	C	9	A	10	D
11	B	12	C	13	A	14	D	15	C
16	A	17	B	18	D	19	C	20	A
21	B	22	D	23	C	24	A	25	B
26	D	27	C	28	B	29	A	30	D