IBSAT Quantitative Aptitude

Sample Paper – 8

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 class the ratio of boys to girls is $3 : 2$. What percent of the class are boys?

(A) 40%

(B) 66%

(C) 60%

(D) 50%

Q2. A trader buys two articles. He buys the first for Rs. 600 and sells it at a profit of 15%, and buys the second for Rs. 400 and sells it at a loss of 5%. What is his overall gain or loss?

(A) Rs. 70 profit

(B) Rs. 70 loss

(C) Rs. 110 profit

(D) Neither profit nor loss

Q3. Two cars cover the same distance. The first car takes 4 hours and the second car takes 6 hours. What is the ratio of the speed of the first car to that of the second car?

(A) 2 : 3

(B) 3 : 2

(C) 4 : 3

(D) 5 : 6

Q4. The average weight of 8 persons increases by 2.5 kg when a new person replaces one of them who weighs 60 kg. What is the weight of the new person?

(A) 62.5 kg

(B) 70 kg

(C) 75 kg

(D) 80 kg

Q5. Find the simple interest on Rs. 6000 at 9% per annum for a period of 6 months.

(A) Rs. 270

(B) Rs. 540

(C) Rs. 300

(D) Rs. 135

Q6. The population of a town is 6250 and it grows at the rate of 4% per annum. What will the population be after 2 years?

(A) 6500

(B) 6600

(C) 6760

(D) 6800

Q7. Three litres of a 20% acid solution are mixed with two litres of a 45% acid solution. What is the acid concentration of the resulting mixture?

(A) 25%

(B) 30%

(C) 32.5%

(D) 65%

Q8. A invests Rs. 5000 and B invests Rs. 7000 in a business for the same period. If the total profit is Rs. 3600, what is A's share of the profit?

(A) Rs. 2100

(B) Rs. 1800

(C) Rs. 1200

(D) Rs. 1500

Q9. A person's salary is first increased by 10% and then the new salary is increased by 20%. What is the net percentage increase in the salary?

(A) 32%

(B) 30%

(C) 33%

(D) 34%

Q10. The value of a machine is Rs. 20000 and it depreciates at the rate of 10% every year. What will its value be after 2 years?

(A) Rs. 16000

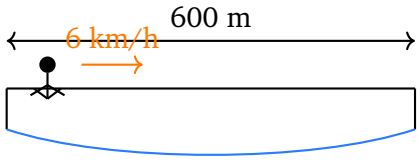
(B) Rs. 16200

(C) Rs. 18000

(D) Rs. 16400

Part B: Speed, Time and Work

Q11. A man walking at a speed of 6 km/h crosses a bridge 600 metres long. How many minutes does he take to cross the bridge?



(A) 10

(B) 3.6

(C) 5

(D) 6

Q12. The speed of a boat in still water is 15 km/h and the speed of the stream is 5 km/h. What is the ratio of the boat's upstream speed to its downstream speed?

(A) 2 : 1

(B) 3 : 2

(C) 1 : 2

(D) 2 : 3

Q13. A alone can complete a piece of work in 15 days. A and B working together can complete the same work in 6 days. In how many days can B alone complete the work?

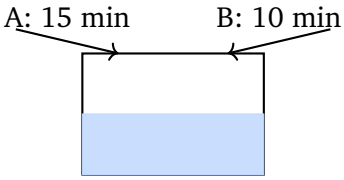
(A) 10

(B) 9

(C) 12

(D) 30

Q14. Two pipes A and B can fill a tank in 15 minutes and 10 minutes respectively. If both pipes are opened together, how long will it take to fill the tank?



(A) 5 minutes

(B) 6 minutes

(C) 12.5 minutes

(D) 25 minutes

Part C: Number System

Q15. What is the remainder when 74532 is divided by 9?

(A) 0

(B) 6

(C) 1

(D) 3

Q16. What is the LCM of the fractions $\frac{2}{3}$, $\frac{4}{9}$ and $\frac{6}{5}$?

(A) 12

(B) 24

(C) 4

(D) 6

Q17. What is the unit digit of 8^{25}?

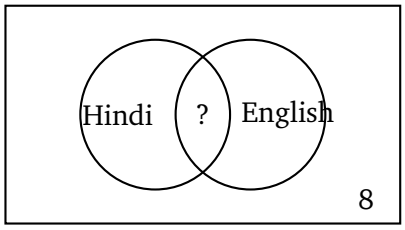
(A) 2

(B) 4

(C) 8

(D) 6

Q18. In a group of 50 people, 30 know Hindi, 25 know English, and 8 know neither language. How many people know both Hindi and English?



(A) 8

(B) 13

(C) 5

(D) 42

Part D: Algebra

Q19. A train travels a distance of 360 km in 4 hours at a uniform speed. What is the speed of the train?

(A) 90 km/h

(B) 80 km/h

(C) 72 km/h

(D) 100 km/h

Q20. For what positive value of k does the quadratic equation $x^2 - kx + 9 = 0$ have equal roots?

(A) 3

(B) 9

(C) 12

(D) 6

Q21. How many integer values of x satisfy the inequality $5 < 2x + 1 < 15$?

(A) 5

(B) 6

(C) 4

(D) 3

Q22. How many terms are there in the arithmetic progression $7, 11, 15, \ldots, 99$?

(A) 23

(B) 24

(C) 25

(D) 92

Q23. In a geometric progression, the first term is 2 and the common ratio is 3. What is the 5th term?

(A) 162

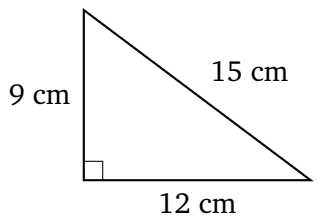
(B) 54

(C) 486

(D) 108

Part E: Geometry and Mensuration

Q24. What is the perimeter of a triangle whose sides measure 9 cm, 12 cm and 15 cm?



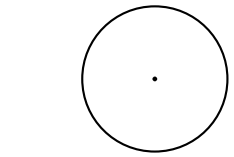
(A) 30 cm

(B) 45 cm

(C) 108 cm

(D) 36 cm

Q25. The circumference of a circle is 44 cm. What is its area? (Take $\pi = \frac{22}{7}$.)



circumference = 44 cm

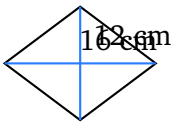
(A) 144 cm^2

(B) 154 cm^2

(C) 176 cm^2

(D) 616 cm^2

Q26. A rhombus has diagonals of length 16 cm and 12 cm. What is its area?



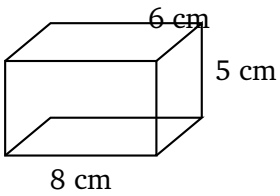
(A) 192 cm^2

(B) 48 cm^2

(C) 96 cm^2

(D) 28 cm^2

Q27. What is the total surface area of a cuboid whose length, breadth and height are 8 cm, 6 cm and 5 cm respectively?



(A) 236 cm^2

(B) 240 cm^2

(C) 118 cm^2

(D) 472 cm^2

Part F: Permutation, Combination and Probability

Q28. How many different signals can be made by arranging 3 flags one above the other on a mast, if 5 different coloured flags are available?

(A) 10

(B) 20

(C) 125

(D) 60

Q29. In how many ways can a student choose 3 questions out of a set of 8 questions?

(A) 336

(B) 56

(C) 24

(D) 512

Q30. A bag contains 4 red balls and 6 blue balls. If one ball is drawn at random, what is the probability that it is red?

(A) $\frac{3}{5}$

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

(C) $\frac{2}{5}$

(D) $\frac{3}{10}$

Detailed Solutions

Q1.

Solution

Concept — Ratio to Percentage: The percentage of a part is that part divided by the whole, multiplied by 100.

Step 1 — Total number of parts in the ratio:

$$3 + 2 = 5.$$

Step 2 — Fraction of the class that are boys:

$$\frac{3}{5}.$$

Step 3 — Convert the fraction to a percentage:

$$\frac{3}{5} \times 100 = 60\%.$$

Why other options are wrong:

- Option A: 40% is the percentage of girls, not boys.
- Option B: 66% wrongly uses the ratio $2 : 1$.
- Option D: 50% assumes an equal $1 : 1$ split.

Final Answer: Boys form $\frac{3}{5} \times 100 = 60\%$ of the class $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q1

Q2.

Solution

Concept — Profit and Loss on Two Articles: Find the selling price of each article, then compare the total selling price with the total cost price.

Step 1 — Selling price of the first article (15% profit):

$$600 \times 1.15 = 690.$$

Step 2 — Selling price of the second article (5% loss):

$$400 \times 0.95 = 380.$$

Step 3 — Total cost price and total selling price:

$$\text{CP} = 600 + 400 = 1000, \qquad \text{SP} = 690 + 380 = 1070.$$

Step 4 — Overall gain:

$$1070 - 1000 = 70 \text{ (profit)}.$$

Why other options are wrong:

- Option B: Rs. 70 loss reverses the sign of the net result.
- Option C: Rs. 110 profit ignores the 5% loss on the second article.
- Option D: The profit and loss do not cancel, so it is not break-even.

Final Answer: Overall gain $= 1070 - 1000 =$ Rs. 70 profit $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q2

Q3.

Solution

Concept — Ratio of Speeds: For a fixed distance, speed is inversely proportional to time, so the ratio of speeds is the inverse of the ratio of times.

Step 1 — Write the ratio of times:

$$\text{Time}_1 : \text{Time}_2 = 4 : 6.$$

Step 2 — Speed is inversely proportional to time:

$$\text{Speed}_1 : \text{Speed}_2 = \frac{1}{4} : \frac{1}{6}.$$

Step 3 — Multiply both parts by 12 to clear fractions:

$$\frac{12}{4} : \frac{12}{6} = 3 : 2.$$

Why other options are wrong:

- Option A: $2 : 3$ is the ratio of times, not speeds.
- Option C: $4 : 3$ does not follow from the given times.
- Option D: $5 : 6$ has no valid basis here.

Final Answer: Ratio of speeds $= 3 : 2 \Rightarrow$ B

Answer: (B) Go Back to Q3

Q4.

Solution

Concept — Average on Replacement: When one member is replaced, the total change in the sum equals the number of members times the change in average.

Step 1 — Total increase in the sum of weights:

$$8 \times 2.5 = 20 \text{ kg}.$$

Step 2 — The new person carries this extra weight over the one removed:

$$\text{New weight} = 60 + 20.$$

Step 3 — Compute:

$$60 + 20 = 80 \text{ kg}.$$

Why other options are wrong:

- Option A: 62.5 kg adds only 2.5 kg once, ignoring the 8 members.
- Option B: 70 kg uses an increase of 10 kg.
- Option C: 75 kg uses an increase of 15 kg.

Final Answer: New person's weight $= 60 + 20 = 80$ kg $\Rightarrow$ D

Answer: (D) Go Back to Q4

Q5.

Solution

Concept — Simple Interest: SI $= \dfrac{P \times R \times T}{100}$, where the time T must be expressed in years.

Step 1 — Convert 6 months to years:

$$6 \text{ months} = \frac{6}{12} = \frac{1}{2} \text{ year}.$$

Step 2 — Substitute the values:

$$\text{SI} = \frac{6000 \times 9 \times \frac{1}{2}}{100}.$$

Step 3 — Multiply the numerator:

$$6000 \times 9 = 54000, \qquad 54000 \times \tfrac{1}{2} = 27000.$$

Step 4 — Divide by 100:

$$\frac{27000}{100} = 270.$$

Why other options are wrong:

- Option B: Rs. 540 uses a full year instead of half a year.
- Option C: Rs. 300 has no valid rate-time basis here.
- Option D: Rs. 135 uses only a quarter of a year.

Final Answer: Simple interest = Rs. 270 $\Rightarrow$ A

Answer: (A) Go Back to Q5

Q6.

Solution

Concept — Population Growth (Compound Method): A population growing at a fixed yearly rate follows $P\left(1 + \dfrac{R}{100}\right)^{T}$.

Step 1 — Write the yearly growth factor:

$$1 + \frac{4}{100} = 1.04.$$

Step 2 — Apply it for the first year:

$$6250 \times 1.04 = 6500.$$

Step 3 — Apply it for the second year:

$$6500 \times 1.04 = 6760.$$

Why other options are wrong:

- Option A: 6500 is the population after only one year.
- Option B: 6600 has no valid basis here.
- Option D: 6800 overstates the second-year growth.

Final Answer: Population after 2 years $= 6250 \times (1.04)^2 = 6760 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q6

Q7.

Solution

Concept — Mixtures: Add the amount of pure acid from each solution, then divide by the total volume of the mixture.

Step 1 — Acid in the 20% solution:

$$20\% \text{ of } 3 = \frac{20}{100} \times 3 = 0.6 \text{ litre}.$$

Step 2 — Acid in the 45% solution:

$$45\% \text{ of } 2 = \frac{45}{100} \times 2 = 0.9 \text{ litre}.$$

Step 3 — Total acid and total volume:

$$\text{Acid} = 0.6 + 0.9 = 1.5 \text{ litre}, \qquad \text{Volume} = 3 + 2 = 5 \text{ litre}.$$

Step 4 — Concentration of the mixture:

$$\frac{1.5}{5} \times 100 = 30\%.$$

Why other options are wrong:

- Option A: 25% averages 20 and 45 without weighting by volume.
- Option C: 32.5% is the plain average of the two percentages.
- Option D: 65% adds the two percentages together.

Final Answer: Concentration $= \frac{1.5}{5} \times 100 = 30\% \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q7

Q8.

Solution

Concept — Partnership: When capitals are invested for the same period, profit is shared in the ratio of the capitals.

Step 1 — Ratio of investments:

$$5000 : 7000 = 5 : 7.$$

Step 2 — Total number of parts:

$$5 + 7 = 12.$$

Step 3 — A's share is 5 of the 12 parts:

$$\frac{5}{12} \times 3600 = 1500.$$

Why other options are wrong:

- Option A: Rs. 2100 is B's share (7 parts), not A's.
- Option B: Rs. 1800 splits the profit equally, ignoring the capitals.
- Option C: Rs. 1200 uses the wrong ratio.

Final Answer: A's profit $= \frac{5}{12} \times 3600 = \text{Rs. } 1500 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q8

Q9.

Solution

Concept — Successive Percentage Increases: Apply each increase as a multiplying factor to the running value, one after the other.

Step 1 — Take the original salary as 100.

Step 2 — Apply the 10% increase:

$$100 \times 1.10 = 110.$$

Step 3 — Apply the 20% increase on the new value:

$$110 \times 1.20 = 132.$$

Step 4 — Compare with the original:

$$132 - 100 = 32 \;\Rightarrow\; \text{a } 32\% \text{ increase.}$$

Why other options are wrong:

- Option B: 30% simply adds the two percentages, ignoring the compounding.
- Option C: 33% has no valid basis here.
- Option D: 34% overstates the combined effect.

Final Answer: Net increase $= 132 - 100 = 32\% \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q9

Q10.

Solution

Concept — Depreciation: A value falling at a fixed yearly rate follows $P\left(1 - \frac{R}{100}\right)^T$.

Step 1 — Write the yearly decay factor:

$$1 - \frac{10}{100} = 0.9.$$

Step 2 — Apply it for the first year:

$$20000 \times 0.9 = 18000.$$

Step 3 — Apply it for the second year:

$$18000 \times 0.9 = 16200.$$

Why other options are wrong:

- Option A: Rs. 16000 subtracts a flat 20%, ignoring the changing base.
- Option C: Rs. 18000 is the value after only one year.
- Option D: Rs. 16400 has no valid basis here.

Final Answer: Value after 2 years $= 20000 \times (0.9)^2 =$ Rs. 16200 $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q10

Q11.

Solution

Concept — Time, Speed and Distance: To cross a bridge, a walker must cover the full length of the bridge; time $= \dfrac{\text{distance}}{\text{speed}}$, with consistent units.

Step 1 — Convert the speed to metres per minute:

$$6 \text{ km/h} = \frac{6000 \text{ m}}{60 \text{ min}} = 100 \text{ m/min}.$$

Step 2 — Distance to cross is the bridge length:

$$\text{Distance} = 600 \text{ m}.$$

Step 3 — Time taken:

$$\frac{600}{100} = 6 \text{ minutes}.$$

Why other options are wrong:

- Option A: 10 minutes uses a speed of 60 m/min.
- Option B: 3.6 minutes mixes up the unit conversion.
- Option C: 5 minutes uses a speed of 120 m/min.

Final Answer: Time $= \frac{600}{100} = 6$ minutes $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q11

Q12.

Solution

Concept — Boats and Streams: Upstream speed = boat speed − stream speed; downstream speed = boat speed + stream speed.

Step 1 — Upstream speed:

$$15 - 5 = 10 \text{ km/h}.$$

Step 2 — Downstream speed:

$$15 + 5 = 20 \text{ km/h}.$$

Step 3 — Form and simplify the ratio:

$$10 : 20 = 1 : 2.$$

Why other options are wrong:

- Option A: $2 : 1$ reverses upstream and downstream.
- Option B: $3 : 2$ does not follow from the given speeds.
- Option D: $2 : 3$ uses the wrong downstream speed.

Final Answer: Upstream : downstream $= 10 : 20 = 1 : 2 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q12

Q13.

Solution

Concept — Time and Work: The combined one-day rate equals the sum of the individual rates, so B's rate = combined rate − A's rate.

Step 1 — One-day work of A and of A and B together:

$$A = \frac{1}{15}, \qquad A + B = \frac{1}{6}.$$

Step 2 — B's one-day work:

$$\frac{1}{6} - \frac{1}{15}.$$

Step 3 — Use the common denominator 30:

$$\frac{5}{30} - \frac{2}{30} = \frac{3}{30} = \frac{1}{10}.$$

Step 4 — Time for B alone is the reciprocal:

$$\frac{1}{1/10} = 10 \text{ days}.$$

Why other options are wrong:

- Option B: 9 days does not match B's computed rate.
- Option C: 12 days uses A's rate instead of B's.
- Option D: 30 days ignores that A and B together take only 6 days.

Final Answer: B alone takes 10 days $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q13

Q14.

Solution

Concept — Pipes and Cisterns: Two filling pipes together fill at the sum of their per-minute rates; the time to fill is the reciprocal of that sum.

Step 1 — Per-minute filling of each pipe:

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

Step 2 — Combined per-minute filling:

$$\frac{1}{15} + \frac{1}{10} = \frac{2}{30} + \frac{3}{30} = \frac{5}{30} = \frac{1}{6}.$$

Step 3 — Time to fill is the reciprocal:

$$\frac{1}{1/6} = 6 \text{ minutes}.$$

Why other options are wrong:

- Option A: 5 minutes overstates the combined rate.
- Option C: 12.5 minutes averages the two times.
- Option D: 25 minutes adds the two times instead of the rates.

Final Answer: Both pipes together fill the tank in 6 minutes $\Rightarrow$ B

Answer: (B) Go Back to Q14

Q15.

Solution

Concept — Divisibility Rule for 9: The remainder when a number is divided by 9 equals the remainder when the sum of its digits is divided by 9.

Step 1 — Add the digits of 74532:

$$7 + 4 + 5 + 3 + 2 = 21.$$

Step 2 — Add the digits again to reduce further:

$$2 + 1 = 3.$$

Step 3 — Since 3 is less than 9, it is the remainder:

$$74532 \div 9 \;\Rightarrow\; \text{remainder } 3.$$

Why other options are wrong:

- Option A: 0 would require the digit sum to be a multiple of 9.
- Option B: 6 comes from a wrong digit total.
- Option C: 1 comes from a wrong digit total.

Final Answer: Digit sum reduces to 3, so the remainder is 3 $\Rightarrow$ D

Answer: (D) Go Back to Q15

Q16.

Solution

Concept — LCM of Fractions: LCM of fractions $= \dfrac{\text{LCM of the numerators}}{\text{HCF of the denominators}}$.

Step 1 — LCM of the numerators 2, 4, 6:

$$\text{LCM}(2, 4, 6) = 12.$$

Step 2 — HCF of the denominators 3, 9, 5:

$$\text{HCF}(3, 9, 5) = 1.$$

Step 3 — Apply the formula:

$$\frac{12}{1} = 12.$$

Why other options are wrong:

- Option B: 24 overstates the LCM of the numerators.
- Option C: 4 is only the LCM of two of the numerators.
- Option D: 6 uses the wrong numerators.

Final Answer: LCM of the fractions $= \frac{12}{1} = 12 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q16

Q17.

Solution

Concept — Unit Digit Cyclicity: The unit digit of powers of 8 repeats in the cycle $8, 4, 2, 6$ with length 4.

Step 1 — Write the cycle of unit digits:

$$8^1 = 8,\ 8^2 = 64 \to 4,\ 8^3 \to 2,\ 8^4 \to 6,\ \text{then it repeats.}$$

Step 2 — Find the position of 25 in the cycle:

$$25 \div 4 = 6 \text{ remainder } 1.$$

Step 3 — Remainder 1 points to the first digit in the cycle:

$$\text{Unit digit} = 8.$$

Why other options are wrong:

- Option A: 2 corresponds to a power $\equiv 3 \pmod 4$.
- Option B: 4 corresponds to a power $\equiv 2 \pmod 4$.
- Option D: 6 corresponds to a power that is a multiple of 4.

Final Answer: The unit digit of 8^{25} is 8 $\Rightarrow$ C

Answer: (C) Go Back to Q17

Q18.

Solution

Concept — Sets (Inclusion–Exclusion): $n(\text{at least one}) = n(\text{Hindi}) + n(\text{English}) - n(\text{both})$; those knowing at least one are the total minus those knowing neither.

Step 1 — People who know at least one language:

$$50 - 8 = 42.$$

Step 2 — Apply the inclusion–exclusion relation:

$$42 = 30 + 25 - n(\text{both}).$$

Step 3 — Solve for those who know both:

$$n(\text{both}) = 55 - 42 = 13.$$

Why other options are wrong:

- Option A: 8 is the number who know neither, not both.
- Option C: 5 comes from a wrong subtraction.
- Option D: 42 is the number who know at least one language.

Final Answer: People who know both $= 55 - 42 = 13$ $\Rightarrow$ B

Answer: (B) Go Back to Q18

Q19.

Solution

Concept — Speed, Distance and Time: These are related by distance $=$ speed $\times$ time, so speed $= \dfrac{\text{distance}}{\text{time}}$.

Step 1 — Write the relation with the unknown speed v:

$$360 = v \times 4.$$

Step 2 — Divide both sides by 4:

$$v = \frac{360}{4}.$$

Step 3 — Compute:

$$v = 90 \text{ km/h}.$$

Why other options are wrong:

- Option B: 80 km/h would cover only 320 km in 4 hours.
- Option C: 72 km/h would cover only 288 km in 4 hours.
- Option D: 100 km/h would cover 400 km in 4 hours.

Final Answer: Speed $= \frac{360}{4} = 90$ km/h $\Rightarrow$ A

Answer: (A) Go Back to Q19

Q20.

Solution

Concept — Equal Roots: A quadratic $ax^2 + bx + c = 0$ has equal roots when its discriminant $b^2 - 4ac = 0$.

Step 1 — Identify the coefficients:

$$a = 1, \quad b = -k, \quad c = 9.$$

Step 2 — Set the discriminant to zero:

$$(-k)^2 - 4(1)(9) = 0.$$

Step 3 — Simplify:

$$k^2 - 36 = 0 \Rightarrow k^2 = 36.$$

Step 4 — Take the positive root:

$$k = 6.$$

Why other options are wrong:

- Option A: 3 gives a discriminant of $9 - 36 = -27$, not zero.
- Option B: 9 gives a discriminant of $81 - 36 = 45$, not zero.
- Option C: 12 gives a discriminant of $144 - 36 = 108$, not zero.

Final Answer: Equal roots require $k = 6 \Rightarrow$ D

Answer: (D) Go Back to Q20

Q21.

Solution

Concept — Double Inequality: Solve the compound inequality for x, then count the integers that lie strictly between the two bounds.

Step 1 — Subtract 1 from every part:

$$5 - 1 < 2x < 15 - 1 \Rightarrow 4 < 2x < 14.$$

Step 2 — Divide every part by 2:

$$2 < x < 7.$$

Step 3 — List the integers strictly between 2 and 7:

$$x = 3, 4, 5, 6 \Rightarrow 4 \text{ values.}$$

Why other options are wrong:

- Option A: 5 wrongly includes an endpoint.
- Option B: 6 counts values outside the range.
- Option D: 3 misses one of the valid integers.

Final Answer: The integers $3, 4, 5, 6$ satisfy it, so there are $4 \Rightarrow$ C

Answer: (C) Go Back to Q21

Q22.

Solution

Concept — Number of Terms in an AP: If the last term is l, the first term a and the common difference d, then $n = \dfrac{l-a}{d} + 1$.

Step 1 — Identify the values:

$$a = 7, \quad d = 11 - 7 = 4, \quad l = 99.$$

Step 2 — Substitute in the formula:

$$n = \frac{99 - 7}{4} + 1.$$

Step 3 — Simplify:

$$n = \frac{92}{4} + 1 = 23 + 1 = 24.$$

Why other options are wrong:

- Option A: 23 forgets to add 1 for the first term.
- Option C: 25 adds one term too many.
- Option D: 92 is the difference $l - a$, not the count.

Final Answer: Number of terms $= \frac{92}{4} + 1 = 24 \Rightarrow$ B

Answer: (B) Go Back to Q22

Q23.

Solution

Concept — Term of a GP: The nth term is $a_n = a\,r^{n-1}$, where a is the first term and r the common ratio.

Step 1 — Write the known values:

$$a = 2, \quad r = 3, \quad n = 5.$$

Step 2 — Substitute in the formula:

$$a_5 = 2 \times 3^{5-1} = 2 \times 3^4.$$

Step 3 — Evaluate the power and multiply:

$$3^4 = 81, \qquad 2 \times 81 = 162.$$

Why other options are wrong:

- Option B: 54 is the fourth term 2×3^3.
- Option C: 486 is the sixth term 2×3^5.
- Option D: 108 has no valid basis here.

Final Answer: The 5th term $= 2 \times 3^4 = 162 \Rightarrow$ A

Answer: (A) Go Back to Q23

Q24.

Solution

Concept — Perimeter of a Triangle: The perimeter is the sum of the lengths of all three sides.

Step 1 — List the three sides:

$$9 \text{ cm}, \quad 12 \text{ cm}, \quad 15 \text{ cm}.$$

Step 2 — Add the first two:

$$9 + 12 = 21.$$

Step 3 — Add the third side:

$$21 + 15 = 36 \text{ cm}.$$

Why other options are wrong:

- Option A: 30 cm leaves out one of the sides.
- Option B: 45 cm adds an extra length.
- Option C: 108 cm multiplies the sides instead of adding them.

Final Answer: Perimeter $= 9 + 12 + 15 = 36$ cm $\Rightarrow$ D

Answer: (D) Go Back to Q24

Q25.

Solution

Concept — Circle from Circumference: First find the radius from $C = 2\pi r$, then use area $= \pi r^2$.

Step 1 — Find the radius from the circumference:

$$2 \times \frac{22}{7} \times r = 44.$$

Step 2 — Solve for r:

$$r = \frac{44 \times 7}{2 \times 22} = \frac{308}{44} = 7 \text{ cm}.$$

Step 3 — Compute the area:

$$\frac{22}{7} \times 7^2 = \frac{22}{7} \times 49 = 22 \times 7 = 154 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 144 cm^2 has no valid basis for radius 7.
- Option C: 176 cm^2 uses the wrong radius.
- Option D: 616 cm^2 uses the diameter as the radius.

Final Answer: Area $= \frac{22}{7} \times 49 = 154$ $\text{cm}^2 \Rightarrow$ B

Answer: (B) Go Back to Q25

Q26.

Solution

Concept — Area of a Rhombus: The area is half the product of the two diagonals, Area $= \frac{1}{2}\, d_1 d_2$.

Step 1 — Multiply the two diagonals:

$$16 \times 12 = 192.$$

Step 2 — Take half of the product:

$$\frac{1}{2} \times 192 = 96 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 192 cm^2 forgets the factor of one-half.
- Option B: 48 cm^2 halves only one diagonal.
- Option D: 28 cm^2 adds the diagonals instead of multiplying.

Final Answer: Area $= \frac{1}{2} \times 16 \times 12 = 96 \text{ cm}^2 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q26

Q27.

Solution

Concept — Total Surface Area of a Cuboid: TSA $= 2(lb + bh + hl)$, summing the areas of all six faces.

Step 1 — Compute the three face products:

$$lb = 8 \times 6 = 48, \quad bh = 6 \times 5 = 30, \quad hl = 5 \times 8 = 40.$$

Step 2 — Add the three products:

$$48 + 30 + 40 = 118.$$

Step 3 — Multiply by 2:

$$2 \times 118 = 236 \text{ cm}^2.$$

Why other options are wrong:

- Option B: 240 cm^2 comes from a wrong face product.
- Option C: 118 cm^2 forgets to multiply by 2.
- Option D: 472 cm^2 multiplies by 4 instead of 2.

Final Answer: TSA $= 2(48 + 30 + 40) = 236 \text{ cm}^2 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q27

Q28.

Solution

Concept — Permutations: Since the order on the mast matters, the number of signals is ${}^{n}P_{r} = \dfrac{n!}{(n-r)!}$.

Step 1 — Identify n and r:

$$n = 5 \text{ flags}, \qquad r = 3 \text{ positions}.$$

Step 2 — Write the permutation as a falling product:

$${}^{5}P_{3} = 5 \times 4 \times 3.$$

Step 3 — Multiply:

$$5 \times 4 = 20, \qquad 20 \times 3 = 60.$$

Why other options are wrong:

- Option A: 10 is ${}^{5}C_{3}$, which ignores the order.
- Option B: 20 stops after two factors.
- Option C: 125 uses 5^{3}, which allows repeats.

Final Answer: Number of signals $= {}^{5}P_{3} = 60 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q28

Q29.

Solution

Concept — Combinations: When order does not matter, the number of selections is $\binom{n}{r} = \dfrac{n!}{r!\,(n-r)!}$.

Step 1 — Substitute $n = 8$, $r = 3$:

$$\binom{8}{3} = \frac{8 \times 7 \times 6}{3 \times 2 \times 1}.$$

Step 2 — Multiply the numerator:

$$8 \times 7 \times 6 = 336.$$

Step 3 — Divide by the denominator:

$$\frac{336}{6} = 56.$$

Why other options are wrong:

- Option A: 336 is ${}^{8}P_{3}$, which counts ordered selections.
- Option C: 24 has no valid basis here.
- Option D: 512 uses 8^3, allowing repeats.

Final Answer: Number of ways $= \binom{8}{3} = 56 \Rightarrow$ B

Answer: (B) Go Back to Q29

Q30.

Solution

Concept — Probability: Probability $= \dfrac{\text{favourable outcomes}}{\text{total outcomes}}$ for equally likely draws.

Step 1 — Total number of balls:

$$4 + 6 = 10.$$

Step 2 — Favourable (red) outcomes:

$$4.$$

Step 3 — Form and simplify the probability:

$$\frac{4}{10} = \frac{2}{5}.$$

Why other options are wrong:

- Option A: $\frac{3}{5}$ is the probability of drawing a blue ball.
- Option B: $\frac{1}{2}$ assumes an equal number of each colour.
- Option D: $\frac{3}{10}$ uses the wrong count of red balls.

Final Answer: $P(\text{red}) = \frac{4}{10} = \frac{2}{5} \Rightarrow$ C

Answer: (C) Go Back to Q30

Answer Key

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