IBSAT Quantitative Aptitude

Sample Paper – 1

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 of 60 students, 45% are girls. If 6 more girls join the class, what percent of the class are girls now?

(A) 48%

(B) 50%

(C) 52%

(D) 55%

Q2. A shopkeeper buys an article for Rs. 800 and sells it at a profit of 15%. What is the selling price?

(A) Rs. 920

(B) Rs. 900

(C) Rs. 940

(D) Rs. 880

Q3. A sum of Rs. 1200 is divided between A and B in the ratio 3 : 5. What is B's share?

(A) Rs. 600

(B) Rs. 450

(C) Rs. 900

(D) Rs. 750

Q4. The average of 5 numbers is 27. If the number 35 is removed from the set, what is the average of the remaining four numbers?

(A) 23

(B) 24

(C) 25

(D) 26

Q5. Find the simple interest on Rs. 5000 at 8% per annum for 3 years.

(A) Rs. 1000

(B) Rs. 1200

(C) Rs. 1300

(D) Rs. 1500

Q6. Find the compound interest on Rs. 10000 at 10% per annum for 2 years, compounded annually.

(A) Rs. 2000

(B) Rs. 2050

(C) Rs. 2200

(D) Rs. 2100

Q7. In what ratio must water be mixed with milk costing Rs. 24 per litre so that the mixture can be sold at Rs. 20 per litre without any profit or loss? (Water is free.)

(A) 1 : 5

(B) 1 : 6

(C) 2 : 5

(D) 1 : 4

Q8. A invests Rs. 4000 and B invests Rs. 6000 in a business for the same period. If the total profit is Rs. 2500, what is B's share of the profit?

(A) Rs. 1000

(B) Rs. 1200

(C) Rs. 1500

(D) Rs. 1600

Q9. The price of an item is first increased by 20% and then decreased by 20%. What is the net change in the price?

(A) No change

(B) 4% decrease

(C) 4% increase

(D) 2% decrease

Q10. The population of a town is 8000 and it increases at the rate of 5% every year. What will the population be after 2 years?

(A) 8400

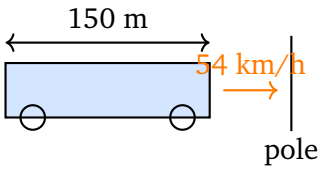
(B) 8800

(C) 8600

(D) 8820

Part B: Speed, Time and Work

Q11. A train 150 metres long is moving at a speed of 54 km/h. How many seconds does it take to cross a stationary pole?



(A) 10

(B) 12

(C) 9

(D) 15

Q12. The speed of a boat in still water is 10 km/h and the speed of the stream is 2 km/h. How long will the boat take to travel 24 km downstream?

(A) 1 hour

(B) 1.5 hours

(C) 2 hours

(D) 3 hours

Q13. A can complete a piece of work in 12 days and B can complete the same work in 6 days. Working together, in how many days will they finish the work?

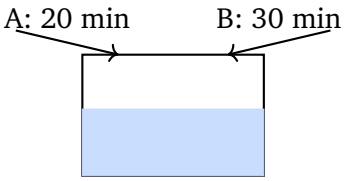
(A) 3

(B) 4

(C) 5

(D) 9

Q14. Two pipes A and B can fill a tank in 20 minutes and 30 minutes respectively. If both pipes are opened together, how long will it take to fill the tank?



(A) 10 minutes

(B) 15 minutes

(C) 25 minutes

(D) 12 minutes

Part C: Number System

Q15. What is the remainder when 7^{100} is divided by 5?

(A) 1

(B) 2

(C) 3

(D) 4

Q16. The HCF of two numbers is 6 and their LCM is 60. If one of the numbers is 12, what is the other number?

(A) 18

(B) 24

(C) 30

(D) 36

Q17. What is the unit digit of 2^{34}?

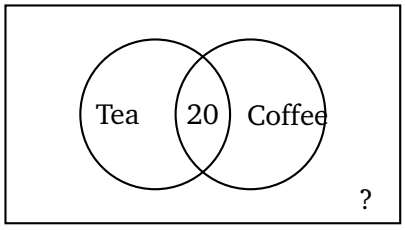
(A) 2

(B) 4

(C) 6

(D) 8

Q18. In a group of 100 students, 60 like tea, 50 like coffee, and 20 like both tea and coffee. How many students like neither tea nor coffee?



(A) 20

(B) 0

(C) 30

(D) 10

Part D: Algebra

Q19. The sum of two numbers is 40 and their difference is 8. What is the larger of the two numbers?

(A) 22

(B) 24

(C) 26

(D) 28

Q20. What is the sum of the roots of the quadratic equation $x^2 - 7x + 12 = 0$?

(A) 5

(B) 6

(C) 7

(D) 12

Q21. For how many positive integer values of x is the inequality $2x + 3 < 15$ satisfied?

(A) 5

(B) 6

(C) 4

(D) 7

Q22. In an arithmetic progression, the first term is 5 and the common difference is 3. What is the 7th term?

(A) 20

(B) 21

(C) 26

(D) 23

Q23. What is the sum of the first four terms of the geometric progression $2,\ 6,\ 18,\ \ldots$?

(A) 54

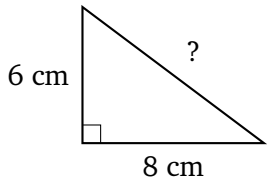
(B) 80

(C) 78

(D) 90

Part E: Geometry and Mensuration

Q24. In the right-angled triangle shown, the two legs measure 6 cm and 8 cm. What is the length of the hypotenuse?



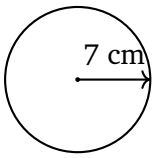
(A) 12 cm

(B) 14 cm

(C) 10 cm

(D) 9 cm

Q25. What is the area of a circle whose radius is 7 cm? (Take $\pi = \frac{22}{7}$.)



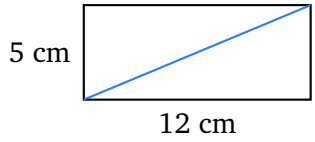
(A) 154 cm^2

(B) 144 cm^2

(C) 168 cm^2

(D) 150 cm^2

Q26. A rectangle has length 12 cm and width 5 cm. What is the length of its diagonal?



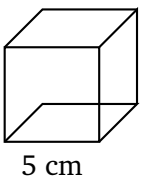
(A) 15 cm

(B) 17 cm

(C) 11 cm

(D) 13 cm

Q27. What is the volume of a cube whose edge measures 5 cm?



(A) 125 cm^3

(B) 150 cm^3

(C) 100 cm^3

(D) 75 cm^3

Part F: Permutation, Combination and Probability

Q28. In how many different ways can the letters of the word "CAT" be arranged?

(A) 3

(B) 6

(C) 9

(D) 12

Q29. In how many ways can 2 students be chosen from a group of 5 students?

(A) 5

(B) 20

(C) 10

(D) 15

Q30. A fair six-faced die is rolled once. What is the probability of getting an even number?

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

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

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

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

Detailed Solutions

Q1.

Solution

Concept — Percentage: A percentage of a quantity is found by multiplying the quantity by the percentage written as a fraction of 100.

Step 1 — Number of girls at first:

$$45\% \text{ of } 60 = \frac{45}{100} \times 60 = 27.$$

Step 2 — After 6 more girls join:

$$\text{Girls} = 27 + 6 = 33.$$

Step 3 — New total strength:

$$\text{Total} = 60 + 6 = 66.$$

Step 4 — New percentage of girls:

$$\frac{33}{66} \times 100 = 50\%.$$

Why other options are wrong:

- Option A: 48% ignores that the total strength also rises when girls join.
- Option C: 52% comes from adding 6 to the percentage rather than to the count.
- Option D: 55% divides 33 by 60 instead of by the new total 66.

Final Answer: The class is now $\frac{33}{66} = 50\%$ girls $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q1

Q2.

Solution

Concept — Profit and Loss: Selling price $=$ cost price $\times \left(1 + \dfrac{\text{profit\%}}{100}\right)$.

Step 1 — Write the profit factor:

$$1 + \frac{15}{100} = 1.15.$$

Step 2 — Multiply by the cost price:

$$\text{SP} = 800 \times 1.15.$$

Step 3 — Compute:

$$800 \times 1.15 = 920.$$

Why other options are wrong:

- Option B: Rs. 900 uses a 12.5% profit, not 15%.
- Option C: Rs. 940 overstates the profit as 17.5%.
- Option D: Rs. 880 uses only a 10% profit.

Final Answer: Selling price $=$ Rs. 920 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q2

Q3.

Solution

Concept — Ratio and Proportion: Split a sum in a given ratio by finding the value of one part, then multiplying by each share.

Step 1 — Total number of parts:

$$3 + 5 = 8.$$

Step 2 — Value of one part:

$$\frac{1200}{8} = 150.$$

Step 3 — B's share is 5 parts:

$$5 \times 150 = 750.$$

Why other options are wrong:

- Option A: Rs. 600 is 4 parts, which fits a 4 : 4 split, not 3 : 5.
- Option B: Rs. 450 is A's share (3 parts), not B's.
- Option C: Rs. 900 is 6 parts and exceeds the correct share.

Final Answer: B receives $5 \times 150 = \text{Rs. } 750 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q3

Q4.

Solution

Concept — Averages: Average $= \dfrac{\text{sum of values}}{\text{number of values}}$, so the sum $=$ average $\times$ count.

Step 1 — Sum of the 5 numbers:

$$27 \times 5 = 135.$$

Step 2 — Remove the number 35:

$$135 - 35 = 100.$$

Step 3 — Average of the remaining 4 numbers:

$$\frac{100}{4} = 25.$$

Why other options are wrong:

- Option A: 23 subtracts too much from the running total.
- Option B: 24 divides 100 by 5 instead of by 4.
- Option D: 26 removes a value smaller than 35.

Final Answer: New average $= \frac{100}{4} = 25 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q4

Q5.

Solution

Concept — Simple Interest: $\text{SI} = \dfrac{P \times R \times T}{100}$, where P is principal, R the rate and T the time in years.

Step 1 — Substitute the values:

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

Step 2 — Multiply the numerator:

$$5000 \times 8 = 40000, \qquad 40000 \times 3 = 120000.$$

Step 3 — Divide by 100:

$$\frac{120000}{100} = 1200.$$

Why other options are wrong:

- Option A: Rs. 1000 uses only 2.5 years or a lower rate.
- Option C: Rs. 1300 does not match any clean rate-time pair here.
- Option D: Rs. 1500 uses a 10% rate instead of 8%.

Final Answer: Simple interest = Rs. 1200 $\Rightarrow$ B

Answer: (B) Go Back to Q5

Q6.

Solution

Concept — Compound Interest: $\text{Amount} = P\left(1 + \dfrac{R}{100}\right)^T$, and CI = Amount $-P$.

Step 1 — Write the growth factor:

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

Step 2 — Raise to the power of the time:

$$(1.1)^2 = 1.21.$$

Step 3 — Find the amount:

$$10000 \times 1.21 = 12100.$$

Step 4 — Subtract the principal:

$$12100 - 10000 = 2100.$$

Why other options are wrong:

- Option A: Rs. 2000 is the simple interest, which ignores interest on interest.
- Option B: Rs. 2050 has no valid basis here.
- Option C: Rs. 2200 overstates the second-year interest.

Final Answer: Compound interest $= 12100 - 10000 =$ Rs. 2100 $\Rightarrow$ D

Answer: (D) Go Back to Q6

Q7.

Solution

Concept — Alligation: When two ingredients are mixed, the ratio of their quantities is the inverse ratio of the distances of their prices from the mean price.

Step 1 — List the prices:

$$\text{Water} = 0, \quad \text{Milk} = 24, \quad \text{Mean} = 20.$$

Step 2 — Distance of each price from the mean:

$$\text{Water side} = 24 - 20 = 4, \qquad \text{Milk side} = 20 - 0 = 20.$$

Step 3 — Ratio water : milk equals the two distances:

$$4 : 20 = 1 : 5.$$

Why other options are wrong:

- Option B: 1 : 6 would push the mean below Rs. 20.6.
- Option C: 2 : 5 gives a mean price above Rs. 20.
- Option D: 1 : 4 gives a mean of Rs. 19.2, not 20.

Final Answer: Water must be mixed in the ratio $1 : 5 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q7

Q8.

Solution

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

Step 1 — Ratio of investments:

$$4000 : 6000 = 2 : 3.$$

Step 2 — Total number of parts:

$$2 + 3 = 5.$$

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

$$\frac{3}{5} \times 2500 = 1500.$$

Why other options are wrong:

- Option A: Rs. 1000 is A's share, not B's.
- Option B: Rs. 1200 splits the profit in the wrong ratio.
- Option D: Rs. 1600 exceeds B's correct three-fifths share.

Final Answer: B's profit $= \frac{3}{5} \times 2500 =$ Rs. 1500 $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q8

Q9.

Solution

Concept — Successive Percentage Change: Apply each change as a multiplying factor to the original value one after the other.

Step 1 — Take the original price as 100.

Step 2 — Apply the 20% increase:

$$100 \times 1.20 = 120.$$

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

$$120 \times 0.80 = 96.$$

Step 4 — Compare with the original:

$$100 \to 96 \;\Rightarrow\; \text{a decrease of } 4\%.$$

Why other options are wrong:

- Option A: The two 20% changes act on different bases, so they do not cancel.
- Option C: The final value is below the original, so it is a decrease, not an increase.
- Option D: 2% decrease uses the wrong base for the second step.

Final Answer: The price falls from 100 to 96, a 4% decrease $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q9

Q10.

Solution

Concept — Percentage Growth: A quantity growing at a fixed rate each year follows the compound-growth formula $P\left(1+\dfrac{R}{100}\right)^{T}$.

Step 1 — Write the yearly growth factor:

$$1+\frac{5}{100} = 1.05.$$

Step 2 — Apply it for 2 years:

$$8000 \times (1.05)^2 = 8000 \times 1.1025.$$

Step 3 — Compute the product:

$$8000 \times 1.1025 = 8820.$$

Why other options are wrong:

- Option A: 8400 adds only one year's 5% growth.
- Option B: 8800 adds a flat 10% without the compounding term.
- Option C: 8600 has no valid basis here.

Final Answer: Population after 2 years $= 8000 \times 1.1025 = 8820 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q10

Q11.

Solution

Concept — Time, Speed and Distance: To cross a pole, a train must cover a distance equal to its own length; time $= \dfrac{\text{distance}}{\text{speed}}$.

Step 1 — Convert the speed to metres per second:

$$54 \text{ km/h} = 54 \times \frac{5}{18} = 15 \text{ m/s}.$$

Step 2 — Distance to cross a pole equals the train length:

$$\text{Distance} = 150 \text{ m}.$$

Step 3 — Time taken:

$$\frac{150}{15} = 10 \text{ seconds}.$$

Why other options are wrong:

- Option B: 12 s uses a speed of 12.5 m/s.
- Option C: 9 s divides by too large a speed.
- Option D: 15 s forgets to convert km/h to m/s.

Final Answer: Time $= \frac{150}{15} = 10$ seconds $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q11

Q12.

Solution

Concept — Boats and Streams: Downstream speed = boat speed + stream speed, because the current helps the boat.

Step 1 — Find the downstream speed:

$$10 + 2 = 12 \text{ km/h}.$$

Step 2 — Time = $\dfrac{\textbf{distance}}{\textbf{speed}}$:

$$\frac{24}{12} = 2 \text{ hours}.$$

Why other options are wrong:

- Option A: 1 hour uses a speed of 24 km/h.
- Option B: 1.5 hours uses 16 km/h.
- Option D: 3 hours uses the upstream speed of 8 km/h instead of downstream.

Final Answer: Time $= \frac{24}{12} = 2$ hours $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q12

Q13.

Solution

Concept — Time and Work: Add the one-day work rates of the workers to get their combined rate, then invert it for the time together.

Step 1 — One-day work of each:

$$A = \frac{1}{12}, \qquad B = \frac{1}{6}.$$

Step 2 — Combined one-day work:

$$\frac{1}{12} + \frac{1}{6} = \frac{1}{12} + \frac{2}{12} = \frac{3}{12} = \frac{1}{4}.$$

Step 3 — Time together is the reciprocal of the combined rate:

$$\frac{1}{1/4} = 4 \text{ days}.$$

Why other options are wrong:

- Option A: 3 days overstates the combined speed.
- Option C: 5 days is slower than B working alone, which is impossible.
- Option D: 9 days averages the two times instead of adding rates.

Final Answer: Together they finish in 4 days $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q13

Q14.

Solution

Concept — Pipes and Cisterns: A filling pipe adds to the tank each minute; add the per-minute rates and invert for the time to fill.

Step 1 — Per-minute filling of each pipe:

$$A = \frac{1}{20}, \qquad B = \frac{1}{30}.$$

Step 2 — Combined per-minute filling:

$$\frac{1}{20} + \frac{1}{30} = \frac{3}{60} + \frac{2}{60} = \frac{5}{60} = \frac{1}{12}.$$

Step 3 — Time to fill is the reciprocal:

$$\frac{1}{1/12} = 12 \text{ minutes}.$$

Why other options are wrong:

- Option A: 10 minutes overstates the combined rate.
- Option B: 15 minutes averages the two times.
- Option C: 25 minutes adds the times instead of the rates.

Final Answer: Both pipes together fill the tank in 12 minutes $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q14

Q15.

Solution

Concept — Remainders and Cyclicity: Replace the base by its remainder, then use the repeating cycle of remainders of its powers.

Step 1 — Reduce the base modulo 5:

$$7 \equiv 2 \pmod 5, \text{ so } 7^{100} \equiv 2^{100} \pmod 5.$$

Step 2 — Find the cycle of $2^n \bmod 5$:

$$2^1 = 2,\ 2^2 = 4,\ 2^3 \equiv 3,\ 2^4 \equiv 1, \text{ cycle length } 4.$$

Step 3 — Locate 100 in the cycle:

$$100 \div 4 = 25 \text{ remainder } 0 \Rightarrow \text{ end of a cycle.}$$

Step 4 — The end of the cycle gives remainder 1:

$$2^{100} \equiv 1 \pmod 5.$$

Why other options are wrong:

- Option B: 2 is the remainder for a power $\equiv 1 \pmod 4$.
- Option C: 3 is the remainder for a power $\equiv 3 \pmod 4$.
- Option D: 4 is the remainder for a power $\equiv 2 \pmod 4$.

Final Answer: $7^{100} \equiv 1 \pmod 5 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q15

Q16.

Solution

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

Step 1 — Product of HCF and LCM:

$$6 \times 60 = 360.$$

Step 2 — This equals the product of the two numbers:

$$12 \times (\text{other}) = 360.$$

Step 3 — Solve for the other number:

$$\text{other} = \frac{360}{12} = 30.$$

Why other options are wrong:

- Option A: 18 gives a product of 216, not 360.
- Option B: 24 gives 288, not 360.
- Option D: 36 gives 432, not 360.

Final Answer: The other number is $\frac{360}{12} = 30 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q16

Q17.

Solution

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

Step 1 — Write the cycle of unit digits:

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

Step 2 — Find the position of 34 in the cycle:

$$34 \div 4 = 8 \text{ remainder } 2.$$

Step 3 — Remainder 2 points to the second digit in the cycle:

$$\text{Unit digit} = 4.$$

Why other options are wrong:

- Option A: 2 corresponds to a power $\equiv 1 \pmod 4$.
- Option C: 6 corresponds to a power that is a multiple of 4.
- Option D: 8 corresponds to a power $\equiv 3 \pmod 4$.

Final Answer: The unit digit of 2^{34} is 4 $\Rightarrow$ B

Answer: (B) Go Back to Q17

Q18.

Solution

Concept — Sets (Inclusion–Exclusion): The number liking at least one drink $= n(\text{Tea}) + n(\text{Coffee}) - n(\text{both})$; the rest like neither.

Step 1 — Students who like at least one:

$$60 + 50 - 20 = 90.$$

Step 2 — Subtract from the total group:

$$100 - 90 = 10.$$

Why other options are wrong:

- Option A: 20 counts those who like both, not neither.
- Option B: 0 forgets to remove the double-counted overlap.
- Option C: 30 adds the overlap instead of subtracting it.

Final Answer: Students liking neither $= 100 - 90 = 10 \Rightarrow$ D

Answer: (D) Go Back to Q18

Q19.

Solution

Concept — Linear Equations: For two numbers, the larger $= \dfrac{\text{sum} + \text{difference}}{2}$.

Step 1 — Let the numbers be x (larger) and y:

$$x + y = 40, \qquad x - y = 8.$$

Step 2 — Add the two equations:

$$2x = 48.$$

Step 3 — Solve for the larger number:

$$x = 24.$$

Why other options are wrong:

- Option A: 22 gives a difference of 4, not 8.
- Option C: 26 gives a difference of 12.
- Option D: 28 gives a difference of 16.

Final Answer: The larger number is $\frac{40+8}{2} = 24 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q19

Q20.

Solution

Concept — Roots of a Quadratic: For $ax^2 + bx + c = 0$, the sum of the roots is $-\frac{b}{a}$.

Step 1 — Identify the coefficients:

$$a = 1, \quad b = -7, \quad c = 12.$$

Step 2 — Apply the sum-of-roots formula:

$$-\frac{b}{a} = -\frac{-7}{1} = 7.$$

Step 3 — Check by factorising:

$$x^2 - 7x + 12 = (x-3)(x-4), \text{ roots } 3 \text{ and } 4, \text{ sum } 7.$$

Why other options are wrong:

- Option A: 5 is the sum of a different pair of factors.
- Option B: 6 has no basis for this equation.
- Option D: 12 is the product of the roots, not their sum.

Final Answer: Sum of roots $= -\frac{b}{a} = 7 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q20

Q21.

Solution

Concept — Linear Inequalities: Solve the inequality for x, then count the positive integers that satisfy it.

Step 1 — Subtract 3 from both sides:

$$2x < 12.$$

Step 2 — Divide by 2:

$$x < 6.$$

Step 3 — List the positive integers below 6:

$$x = 1, 2, 3, 4, 5 \;\Rightarrow\; 5 \text{ values.}$$

Why other options are wrong:

- Option B: 6 wrongly includes $x = 6$, which gives $2x + 3 = 15$, not less than 15.
- Option C: 4 misses $x = 5$.
- Option D: 7 counts values that do not satisfy the inequality.

Final Answer: There are 5 positive integers (1 to 5) $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q21

Q22.

Solution

Concept — Arithmetic Progression: The nth term is $a_n = a + (n-1)d$, where a is the first term and d the common difference.

Step 1 — Write the known values:

$$a = 5, \quad d = 3, \quad n = 7.$$

Step 2 — Substitute in the formula:

$$a_7 = 5 + (7 - 1) \times 3.$$

Step 3 — Simplify:

$$a_7 = 5 + 18 = 23.$$

Why other options are wrong:

- Option A: 20 uses $(n-1) = 5$ instead of 6.
- Option B: 21 adds only five common differences.
- Option C: 26 uses $n = 8$.

Final Answer: The 7th term is $5 + 6 \times 3 = 23 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q22

Q23.

Solution

Concept — Geometric Progression: Each term is the previous term multiplied by a fixed common ratio r.

Step 1 — Find the common ratio:

$$r = \frac{6}{2} = 3.$$

Step 2 — Write the first four terms:

$$2,\ 6,\ 18,\ 54.$$

Step 3 — Add them:

$$2 + 6 + 18 + 54 = 80.$$

Why other options are wrong:

- Option A: 54 is only the fourth term, not the sum.
- Option C: 78 drops the first term.
- Option D: 90 adds an extra term.

Final Answer: Sum of the first four terms $= 80 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q23

Q24.

Solution

Concept — Pythagoras Theorem: In a right triangle, the square of the hypotenuse equals the sum of the squares of the two legs.

Step 1 — Square the two legs:

$$6^2 = 36, \qquad 8^2 = 64.$$

Step 2 — Add the squares:

$$36 + 64 = 100.$$

Step 3 — Take the square root:

$$\sqrt{100} = 10 \text{ cm}.$$

Why other options are wrong:

- Option A: 12 cm comes from adding the legs incorrectly.
- Option B: 14 cm adds the legs directly $(6 + 8)$.
- Option D: 9 cm is less than the longer leg, which is impossible.

Final Answer: Hypotenuse $= \sqrt{6^2 + 8^2} = 10$ cm $\Rightarrow$ C

Answer: (C) Go Back to Q24

Q25.

Solution

Concept — Area of a Circle: Area $= \pi r^2$, where r is the radius.

Step 1 — Square the radius:

$$7^2 = 49.$$

Step 2 — Multiply by $\pi = \frac{22}{7}$:

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

Step 3 — Simplify:

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

Why other options are wrong:

- Option B: 144 cm^2 has no valid basis for radius 7.
- Option C: 168 cm^2 uses the wrong multiple of 7.
- Option D: 150 cm^2 rounds incorrectly.

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

Answer: (A) Go Back to Q25

Q26.

Solution

Concept — Diagonal of a Rectangle: The diagonal $= \sqrt{\text{length}^2 + \text{width}^2}$, from the Pythagoras theorem applied to the two sides.

Step 1 — Square the length and the width:

$$12^2 = 144, \qquad 5^2 = 25.$$

Step 2 — Add the squares:

$$144 + 25 = 169.$$

Step 3 — Take the square root:

$$\sqrt{169} = 13 \text{ cm}.$$

Why other options are wrong:

- Option A: 15 cm has no valid basis here.
- Option B: 17 cm adds the sides directly $(12 + 5)$.
- Option C: 11 cm is shorter than the length, which is impossible.

Final Answer: Diagonal $= \sqrt{12^2 + 5^2} = 13$ cm $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q26

Q27.

Solution

Concept — Volume of a Cube: Volume $=$ edge^3.

Step 1 — Cube the edge length:

$$5^3 = 5 \times 5 \times 5.$$

Step 2 — Multiply step by step:

$$5 \times 5 = 25, \qquad 25 \times 5 = 125.$$

Step 3 — Write the result with units:

$$\text{Volume} = 125 \text{ cm}^3.$$

Why other options are wrong:

- Option B: 150 cm^3 has no valid basis for edge 5.
- Option C: 100 cm^3 uses $5^2 \times 4$ incorrectly.
- Option D: 75 cm^3 multiplies the edge by 15.

Final Answer: Volume $= 5^3 = 125$ cm^3 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q27

Q28.

Solution

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

Step 1 — Count the distinct letters in "CAT":

$$\text{C, A, T} \;\Rightarrow\; n = 3 \text{ (all different)}.$$

Step 2 — Compute $3!$**:**

$$3! = 3 \times 2 \times 1 = 6.$$

Why other options are wrong:

- Option A: 3 counts the letters, not their arrangements.
- Option C: 9 uses 3^2 instead of $3!$.
- Option D: 12 overcounts the arrangements.

Final Answer: Number of arrangements $= 3! = 6 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q28

Q29.

Solution

Concept — Combinations: The number of ways to choose r objects from n, where order does not matter, is $\binom{n}{r} = \dfrac{n!}{r!\,(n-r)!}$.

Step 1 — Substitute $n = 5$, $r = 2$:

$$\binom{5}{2} = \frac{5!}{2!\,3!}.$$

Step 2 — Simplify using $\dfrac{5 \times 4}{2 \times 1}$:

$$\frac{5 \times 4}{2 \times 1} = \frac{20}{2}.$$

Step 3 — Compute:

$$\frac{20}{2} = 10.$$

Why other options are wrong:

- Option A: 5 counts single choices, not pairs.
- Option B: 20 counts ordered pairs (permutations), double the correct value.
- Option D: 15 has no valid basis here.

Final Answer: Number of ways $= \binom{5}{2} = 10 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q29

Q30.

Solution

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

Step 1 — Total outcomes on a die:

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

Step 2 — Favourable (even) outcomes:

$$\{2, 4, 6\} \Rightarrow 3 \text{ outcomes.}$$

Step 3 — Form and simplify the ratio:

$$\frac{3}{6} = \frac{1}{2}.$$

Why other options are wrong:

- Option A: $\frac{1}{3}$ counts only two favourable outcomes.
- Option B: $\frac{1}{4}$ has no basis for a single die.
- Option C: $\frac{2}{3}$ counts four favourable outcomes.

Final Answer: $P(\text{even}) = \frac{3}{6} = \frac{1}{2} \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q30

Answer Key

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