IBSAT Quantitative Aptitude

Sample Paper – 2

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. A student scored 468 marks out of a maximum of 600 marks in an examination. What percentage of the total marks did the student score?

(A) 72%

(B) 75%

(C) 78%

(D) 80%

Q2. A trader buys an article for Rs. 1200 and sells it at a loss of 12%. What is the selling price of the article?

(A) Rs. 1056

(B) Rs. 1044

(C) Rs. 1080

(D) Rs. 1032

Q3. A sum of Rs. 6300 is divided among A, B and C in the ratio 2 : 3 : 4. What is C's share?

(A) Rs. 1400

(B) Rs. 2100

(C) Rs. 3150

(D) Rs. 2800

Q4. The average age of 8 members of a team is 24 years. When a new member joins, the average age becomes 25 years. What is the age of the new member?

(A) 32 years

(B) 33 years

(C) 34 years

(D) 30 years

Q5. The simple interest on Rs. 4000 for 2 years is Rs. 640. What is the rate of interest per annum?

(A) 6%

(B) 7%

(C) 8%

(D) 10%

Q6. Find the compound interest on Rs. 12000 at 10% per annum for 2 years, compounded annually.

(A) Rs. 2520

(B) Rs. 2400

(C) Rs. 2600

(D) Rs. 2420

Q7. In what ratio must rice costing Rs. 30 per kg be mixed with rice costing Rs. 40 per kg so that the mixture is worth Rs. 34 per kg?

(A) 2 : 3

(B) 3 : 2

(C) 4 : 3

(D) 1 : 1

Q8. A, B and C invest Rs. 5000, Rs. 6000 and Rs. 9000 respectively in a business for the same period. If the total profit is Rs. 4000, what is C's share of the profit?

(A) Rs. 1000

(B) Rs. 1200

(C) Rs. 1500

(D) Rs. 1800

Q9. An article has a marked price of Rs. 2000. Two successive discounts of 20% and 10% are given on it. What is the final selling price?

(A) Rs. 1400

(B) Rs. 1420

(C) Rs. 1440

(D) Rs. 1460

Q10. A machine is bought for Rs. 50000 and its value depreciates at the rate of 10% every year. What is its value after 2 years?

(A) Rs. 40500

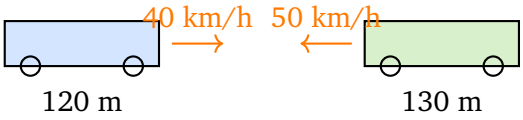
(B) Rs. 40000

(C) Rs. 45000

(D) Rs. 41000

Part B: Speed, Time and Work

Q11. Two trains of lengths 120 m and 130 m are moving towards each other on parallel tracks at speeds of 40 km/h and 50 km/h respectively. How many seconds do they take to completely cross each other?



(A) 8

(B) 10

(C) 12

(D) 9

Q12. The speed of a boat in still water is 12 km/h and the speed of the stream is 4 km/h. How long will the boat take to travel 32 km upstream?

(A) 2 hours

(B) 2.5 hours

(C) 3 hours

(D) 4 hours

Q13. A can do a piece of work in 10 days and B can do it in 15 days. They work together for 3 days, after which B leaves. In how many more days will A finish the remaining work alone?

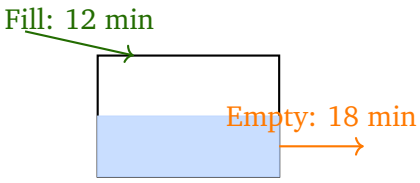
(A) 3

(B) 4

(C) 5

(D) 6

Q14. A filling pipe can fill a tank in 12 minutes and an emptying pipe can empty the full tank in 18 minutes. If both pipes are opened together on an empty tank, how long will it take to fill the tank?



(A) 36 minutes

(B) 30 minutes

(C) 45 minutes

(D) 24 minutes

Part C: Number System

Q15. What is the remainder when 3^{100} is divided by 7?

(A) 1

(B) 2

(C) 3

(D) 4

Q16. What is the least common multiple (LCM) of 12, 15 and 20?

(A) 30

(B) 60

(C) 120

(D) 45

Q17. What is the unit digit of 3^{47}?

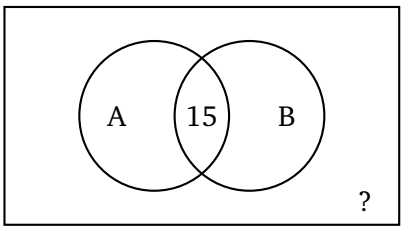
(A) 1

(B) 3

(C) 7

(D) 9

Q18. In a group of 80 people, 40 read newspaper A, 35 read newspaper B, and 15 read both newspapers. How many people read neither newspaper?



(A) 20

(B) 15

(C) 25

(D) 10

Part D: Algebra

Q19. A father is at present three times as old as his son. After 12 years, the father will be twice as old as his son. What is the present age of the son?

(A) 6 years

(B) 8 years

(C) 10 years

(D) 12 years

Q20. What is the product of the roots of the quadratic equation $x^2 - 9x + 20 = 0$?

(A) 9

(B) 20

(C) 5

(D) 4

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

(A) 5

(B) 6

(C) 4

(D) 7

Q22. In an arithmetic progression, the first term is 3 and the common difference is 4. What is the sum of the first 10 terms?

(A) 190

(B) 200

(C) 210

(D) 220

Q23. In a geometric progression, the first term is 3 and the common ratio is 2. What is the 6th term?

(A) 64

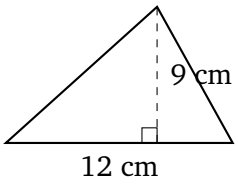
(B) 96

(C) 48

(D) 192

Part E: Geometry and Mensuration

Q24. In the triangle shown, the base measures 12 cm and the height measures 9 cm. What is the area of the triangle?



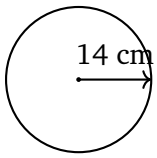
(A) 108 cm^2

(B) 60 cm^2

(C) 48 cm^2

(D) 54 cm^2

Q25. What is the circumference of a circle whose radius is 14 cm? (Take $\pi = \frac{22}{7}$.)



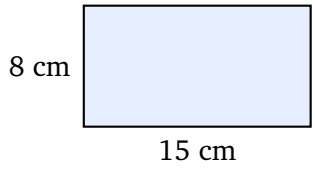
(A) 88 cm

(B) 44 cm

(C) 96 cm

(D) 66 cm

Q26. A rectangle has length 15 cm and width 8 cm. What is its area?



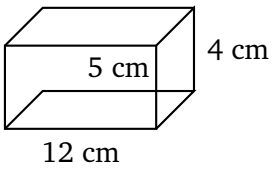
(A) 100 cm^2

(B) 110 cm^2

(C) 120 cm^2

(D) 46 cm^2

Q27. What is the volume of a cuboid whose length, breadth and height are 12 cm, 5 cm and 4 cm respectively?



(A) 120 cm^3

(B) 240 cm^3

(C) 60 cm^3

(D) 300 cm^3

Part F: Permutation, Combination and Probability

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

(A) 120

(B) 60

(C) 20

(D) 30

Q29. In how many ways can a committee of 3 members be chosen from a group of 7 people?

(A) 35

(B) 21

(C) 42

(D) 70

Q30. Two fair coins are tossed together once. What is the probability of getting two heads?

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

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

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

(D) $\frac{3}{4}$

Detailed Solutions

Q1.

Solution

Concept — Percentage: A percentage score is the marks obtained divided by the maximum marks, multiplied by 100.

Step 1 — Write the fraction of marks scored:

$$\frac{468}{600}.$$

Step 2 — Multiply by 100 to get the percentage:

$$\frac{468}{600} \times 100.$$

Step 3 — Simplify the expression:

$$\frac{468}{6} = 78.$$

Step 4 — Write the result as a percentage:

$$\text{Percentage} = 78\%.$$

Why other options are wrong:

- Option A: 72% corresponds to 432 marks, not 468.
- Option B: 75% corresponds to 450 marks.
- Option D: 80% corresponds to 480 marks.

Final Answer: The student scored $\frac{468}{600} \times 100 = 78\% \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q1

Q2.

Solution

Concept — Loss Percent: Selling price $=$ cost price $\times \left(1 - \frac{\text{loss}\%}{100}\right)$.

Step 1 — Write the loss factor:

$$1 - \frac{12}{100} = 0.88.$$

Step 2 — Multiply by the cost price:

$$\text{SP} = 1200 \times 0.88.$$

Step 3 — Compute the product:

$$1200 \times 0.88 = 1056.$$

Why other options are wrong:

- Option B: Rs. 1044 uses a 13% loss.
- Option C: Rs. 1080 uses a 10% loss.
- Option D: Rs. 1032 uses a 14% loss.

Final Answer: Selling price $= 1200 \times 0.88 =$ Rs. 1056 $\Rightarrow$ A

Answer: (A) Go Back to Q2

Q3.

Solution

Concept — Ratio Split: Divide the sum by the total number of parts to find one part, then multiply by the required share.

Step 1 — Total number of parts:

$$2 + 3 + 4 = 9.$$

Step 2 — Value of one part:

$$\frac{6300}{9} = 700.$$

Step 3 — C's share is 4 parts:

$$4 \times 700 = 2800.$$

Why other options are wrong:

- Option A: Rs. 1400 is A's share (2 parts).
- Option B: Rs. 2100 is B's share (3 parts).
- Option C: Rs. 3150 is half the sum, which fits no share here.

Final Answer: C receives $4 \times 700 = \text{Rs. } 2800 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q3

Q4.

Solution

Concept — Averages: The sum of a set equals its average times the count; the new member's value equals the new total minus the old total.

Step 1 — Sum of the original 8 ages:

$$24 \times 8 = 192.$$

Step 2 — Sum of all 9 ages after the new member joins:

$$25 \times 9 = 225.$$

Step 3 — Age of the new member:

$$225 - 192 = 33.$$

Why other options are wrong:

- Option A: 32 years uses a new total of 224.
- Option C: 34 years uses a new total of 226.
- Option D: 30 years wrongly assumes the average is unchanged plus a small addition.

Final Answer: New member's age $= 225 - 192 = 33$ years $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q4

Q5.

Solution

Concept — Simple Interest (Rate): From $\text{SI} = \dfrac{P \times R \times T}{100}$, the rate is $R = \dfrac{\text{SI} \times 100}{P \times T}$.

Step 1 — Substitute the known values:

$$R = \frac{640 \times 100}{4000 \times 2}.$$

Step 2 — Simplify the denominator:

$$4000 \times 2 = 8000.$$

Step 3 — Simplify the numerator:

$$640 \times 100 = 64000.$$

Step 4 — Divide:

$$\frac{64000}{8000} = 8.$$

Why other options are wrong:

- Option A: 6% gives SI of Rs. 480, not Rs. 640.
- Option B: 7% gives SI of Rs. 560.
- Option D: 10% gives SI of Rs. 800.

Final Answer: Rate $= \dfrac{640 \times 100}{4000 \times 2} = 8\% \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q5

Q6.

Solution

Concept — Compound Interest: 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 it to the power of the time:

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

Step 3 — Find the amount:

$$12000 \times 1.21 = 14520.$$

Step 4 — Subtract the principal:

$$14520 - 12000 = 2520.$$

Why other options are wrong:

- Option B: Rs. 2400 is the simple interest, ignoring interest on interest.
- Option C: Rs. 2600 overstates the second-year interest.
- Option D: Rs. 2420 has no valid basis here.

Final Answer: Compound interest $= 14520 - 12000 =$ Rs. 2520 $\Rightarrow$ A

Answer: (A) Go Back to Q6

Q7.

Solution

Concept — Alligation: The ratio of the two ingredients is the inverse ratio of the distances of their prices from the mean price.

Step 1 — List the prices:

$$\text{Cheaper} = 30, \quad \text{Dearer} = 40, \quad \text{Mean} = 34.$$

Step 2 — Distance of each price from the mean:

$$\text{Dearer} - \text{Mean} = 40 - 34 = 6, \qquad \text{Mean} - \text{Cheaper} = 34 - 30 = 4.$$

Step 3 — Ratio of cheaper to dearer equals these two distances:

$$6 : 4 = 3 : 2.$$

Why other options are wrong:

- Option A: 2 : 3 gives a mean of Rs. 36, not 34.
- Option C: 4 : 3 gives a mean below 34.
- Option D: 1 : 1 gives a mean of Rs. 35.

Final Answer: The rice must be mixed in the ratio $3 : 2 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q7

Q8.

Solution

Concept — Partnership: With equal investment periods, profit is shared in the ratio of the capitals.

Step 1 — Ratio of investments:

$$5000 : 6000 : 9000 = 5 : 6 : 9.$$

Step 2 — Total number of parts:

$$5 + 6 + 9 = 20.$$

Step 3 — C's share is 9 of the 20 parts:

$$\frac{9}{20} \times 4000 = 1800.$$

Why other options are wrong:

- Option A: Rs. 1000 is A's share (5 parts).
- Option B: Rs. 1200 is B's share (6 parts).
- Option C: Rs. 1500 fits no share in this ratio.

Final Answer: C's profit $= \frac{9}{20} \times 4000 =$ Rs. 1800 $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q8

Q9.

Solution

Concept — Successive Discounts: Apply each discount as a multiplying factor to the marked price one after the other.

Step 1 — Apply the first discount of 20%:

$$2000 \times 0.80 = 1600.$$

Step 2 — Apply the second discount of 10% on the new value:

$$1600 \times 0.90 = 1440.$$

Why other options are wrong:

- Option A: Rs. 1400 subtracts a flat 30% instead of applying the discounts in succession.
- Option B: Rs. 1420 has no valid basis here.
- Option D: Rs. 1460 understates the total discount.

Final Answer: Final price $= 2000 \times 0.80 \times 0.90 =$ Rs. 1440 $\Rightarrow$ C

Answer: (C) Go Back to Q9

Q10.

Solution

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

Step 1 — Write the yearly depreciation factor:

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

Step 2 — Apply it for 2 years:

$$50000 \times (0.9)^2 = 50000 \times 0.81.$$

Step 3 — Compute the product:

$$50000 \times 0.81 = 40500.$$

Why other options are wrong:

- Option B: Rs. 40000 subtracts a flat 20% without compounding.
- Option C: Rs. 45000 applies only one year of depreciation.
- Option D: Rs. 41000 has no valid basis here.

Final Answer: Value after 2 years $= 50000 \times 0.81 =$ Rs. 40500 $\Rightarrow$ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept — Trains Crossing Each Other: When two trains move towards each other, their relative speed is the sum of their speeds, and the distance to cross is the sum of their lengths.

Step 1 — Relative speed in km/h:

$$40 + 50 = 90 \text{ km/h}.$$

Step 2 — Convert to metres per second:

$$90 \times \frac{5}{18} = 25 \text{ m/s}.$$

Step 3 — Total distance to cross:

$$120 + 130 = 250 \text{ m}.$$

Step 4 — Time taken:

$$\frac{250}{25} = 10 \text{ seconds}.$$

Why other options are wrong:

- Option A: 8 s uses too high a relative speed.
- Option C: 12 s uses a relative speed of about 20.8 m/s.
- Option D: 9 s divides by an incorrect speed.

Final Answer: Time $= \frac{250}{25} = 10$ seconds $\Rightarrow$ B

Answer: (B) Go Back to Q11

Q12.

Solution

Concept — Boats and Streams: Upstream speed = boat speed − stream speed, because the current opposes the boat.

Step 1 — Find the upstream speed:

$$12 - 4 = 8 \text{ km/h}.$$

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

$$\frac{32}{8} = 4 \text{ hours}.$$

Why other options are wrong:

- Option A: 2 hours uses the downstream speed of 16 km/h.
- Option B: 2.5 hours uses a speed of about 12.8 km/h.
- Option C: 3 hours uses a speed of about 10.7 km/h.

Final Answer: Time $= \frac{32}{8} = 4$ hours $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q12

Q13.

Solution

Concept — Time and Work: Add the daily rates for the shared period, find the work left, then divide by the remaining worker's rate.

Step 1 — Daily work of each:

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

Step 2 — Combined daily work:

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

Step 3 — Work done together in 3 days:

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

Step 4 — Work remaining after B leaves:

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

Step 5 — Time for A to finish the remaining half alone:

$$\frac{1/2}{1/10} = \frac{1}{2} \times 10 = 5 \text{ days}.$$

Why other options are wrong:

- Option A: 3 days ignores that only half the work remains for A alone.
- Option B: 4 days uses B's rate for the remainder.
- Option D: 6 days overstates the remaining work.

Final Answer: A needs 5 more days to finish $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q13

Q14.

Solution

Concept — Fill and Empty Pipes: A filling pipe adds water while an emptying pipe removes it; subtract the emptying rate from the filling rate to get the net rate.

Step 1 — Per-minute rate of each pipe:

$$\text{Fill} = \frac{1}{12}, \qquad \text{Empty} = \frac{1}{18}.$$

Step 2 — Net per-minute filling rate:

$$\frac{1}{12} - \frac{1}{18} = \frac{3}{36} - \frac{2}{36} = \frac{1}{36}.$$

Step 3 — Time to fill is the reciprocal of the net rate:

$$\frac{1}{1/36} = 36 \text{ minutes}.$$

Why other options are wrong:

- Option B: 30 minutes ignores part of the emptying effect.
- Option C: 45 minutes overstates the emptying rate.

- Option D: 24 minutes adds the rates instead of subtracting.

Final Answer: The tank fills in 36 minutes $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q14

Q15.

Solution

Concept — Remainders and Cyclicity: The remainders of the powers of a base repeat in a fixed cycle; locate the exponent within that cycle.

Step 1 — Find the cycle of $3^n \bmod 7$:

$$3^1 \equiv 3,\ 3^2 \equiv 2,\ 3^3 \equiv 6,\ 3^4 \equiv 4,\ 3^5 \equiv 5,\ 3^6 \equiv 1,\ \text{cycle length } 6.$$

Step 2 — Locate 100 in the cycle:

$$100 \div 6 = 16 \text{ remainder } 4.$$

Step 3 — Remainder 4 points to the fourth term of the cycle:

$$3^{100} \equiv 3^4 \equiv 4 \pmod 7.$$

Why other options are wrong:

- Option A: 1 is the remainder for an exponent that is a multiple of 6.
- Option B: 2 is the remainder for an exponent $\equiv 2 \pmod 6$.
- Option C: 3 is the remainder for an exponent $\equiv 1 \pmod 6$.

Final Answer: $3^{100} \equiv 4 \pmod 7 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q15

Q16.

Solution

Concept — LCM: The LCM is found by taking the highest power of each prime factor that appears in any of the numbers.

Step 1 — Factorise each number:

$$12 = 2^2 \times 3, \qquad 15 = 3 \times 5, \qquad 20 = 2^2 \times 5.$$

Step 2 — Take the highest power of each prime:

$$2^2, \quad 3, \quad 5.$$

Step 3 — Multiply these together:

$$4 \times 3 \times 5 = 60.$$

Why other options are wrong:

- Option A: 30 is not divisible by 12 or 20.
- Option C: 120 is a common multiple but not the least.
- Option D: 45 is not divisible by 12 or 20.

Final Answer: LCM of 12, 15 and 20 is 60 $\Rightarrow$ B

Answer: (B) Go Back to Q16

Q17.

Solution

Concept — Unit Digit Cyclicity: The unit digit of powers of 3 repeats in the cycle $3, 9, 7, 1$ with length 4.

Step 1 — Write the cycle of unit digits:

$$3^1 = 3,\ 3^2 = 9,\ 3^3 = 27\ (7),\ 3^4 = 81\ (1),\ \text{then it repeats.}$$

Step 2 — Find the position of 47 in the cycle:

$$47 \div 4 = 11 \text{ remainder } 3.$$

Step 3 — Remainder 3 points to the third digit of the cycle:

$$\text{Unit digit} = 7.$$

Why other options are wrong:

- Option A: 1 corresponds to an exponent that is a multiple of 4.
- Option B: 3 corresponds to an exponent $\equiv 1 \pmod 4$.
- Option D: 9 corresponds to an exponent $\equiv 2 \pmod 4$.

Final Answer: The unit digit of 3^{47} is 7 $\Rightarrow$ C

Answer: (C) Go Back to Q17

Q18.

Solution

Concept — Sets (Inclusion–Exclusion): The number reading at least one $= n(A) + n(B) - n(\text{both})$; the rest read neither.

Step 1 — People who read at least one newspaper:

$$40 + 35 - 15 = 60.$$

Step 2 — Subtract from the total group:

$$80 - 60 = 20.$$

Why other options are wrong:

- Option B: 15 counts those who read both, not neither.
- Option C: 25 forgets to subtract the overlap once.
- Option D: 10 removes the overlap twice.

Final Answer: People reading neither $= 80 - 60 = 20 \Rightarrow$ A

Answer: (A) Go Back to Q18

Q19.

Solution

Concept — Linear Equations (Ages): Express both present ages in one variable, then form an equation from the future condition.

Step 1 — Let the son's present age be x:

$$\text{Son} = x, \qquad \text{Father} = 3x.$$

Step 2 — Write their ages after 12 years:

$$\text{Son} = x + 12, \qquad \text{Father} = 3x + 12.$$

Step 3 — Apply the future condition (father twice the son):

$$3x + 12 = 2(x + 12).$$

Step 4 — Expand and solve:

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

Why other options are wrong:

- Option A: 6 years makes the father 30 in 12 years while the son is 18, not a 2 : 1 ratio.
- Option B: 8 years does not satisfy the future condition.
- Option C: 10 years gives father 42 and son 22 in 12 years, not double.

Final Answer: The son is presently 12 years old $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q19

Q20.

Solution

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

Step 1 — Identify the coefficients:

$$a = 1, \quad b = -9, \quad c = 20.$$

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

$$\frac{c}{a} = \frac{20}{1} = 20.$$

Step 3 — Check by factorising:

$$x^2 - 9x + 20 = (x - 4)(x - 5), \text{ roots } 4 \text{ and } 5, \text{ product } 20.$$

Why other options are wrong:

- Option A: 9 is the sum of the roots, not the product.
- Option C: 5 is one of the roots.
- Option D: 4 is the other root.

Final Answer: Product of roots $= \frac{c}{a} = 20 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q20

Q21.

Solution

Concept — Compound Inequality: Solve both parts to bound x, then count the integers strictly inside those bounds.

Step 1 — Subtract 1 throughout:

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

Step 2 — Divide throughout by 2:

$$2 < x \leq 7.$$

Step 3 — List the integers in this range:

$$x = 3, 4, 5, 6, 7 \;\Rightarrow\; 5 \text{ values.}$$

Why other options are wrong:

- Option B: 6 wrongly includes $x = 2$, which does not satisfy $2 < x$.
- Option C: 4 drops $x = 7$, which does satisfy $x \leq 7$.
- Option D: 7 counts values outside the range.

Final Answer: There are 5 integers (3 to 7) $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q21

Q22.

Solution

Concept — Sum of an AP: The sum of the first n terms is $S_n = \frac{n}{2}\big[2a + (n-1)d\big]$.

Step 1 — Write the known values:

$$a = 3, \quad d = 4, \quad n = 10.$$

Step 2 — Substitute into the formula:

$$S_{10} = \frac{10}{2}\big[2(3) + (10-1)(4)\big].$$

Step 3 — Simplify inside the bracket:

$$2(3) + 9(4) = 6 + 36 = 42.$$

Step 4 — Multiply:

$$5 \times 42 = 210.$$

Why other options are wrong:

- Option A: 190 uses $(n-1) = 8$ instead of 9.
- Option B: 200 miscounts the bracket total.
- Option D: 220 uses $n = 11$.

Final Answer: Sum of the first 10 terms $= 5 \times 42 = 210 \Rightarrow$ C

Answer: (C) Go Back to Q22

Q23.

Solution

Concept — Term of a GP: The nth term of a geometric progression is $a_n = a\,r^{n-1}$.

Step 1 — Write the known values:

$$a = 3, \quad r = 2, \quad n = 6.$$

Step 2 — Substitute into the formula:

$$a_6 = 3 \times 2^{6-1} = 3 \times 2^5.$$

Step 3 — Evaluate the power:

$$2^5 = 32.$$

Step 4 — Multiply:

$$3 \times 32 = 96.$$

Why other options are wrong:

- Option A: 64 uses 2^6 without the first term factor.
- Option C: 48 uses 2^4 instead of 2^5.
- Option D: 192 uses 2^6.

Final Answer: The 6th term $= 3 \times 2^5 = 96 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q23

Q24.

Solution

Concept — Area of a Triangle: Area $= \frac{1}{2} \times$ base $\times$ height.

Step 1 — Multiply the base and the height:

$$12 \times 9 = 108.$$

Step 2 — Take half of this product:

$$\frac{1}{2} \times 108 = 54.$$

Step 3 — Write the result with units:

$$\text{Area} = 54 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 108 cm^2 forgets to halve the product.
- Option B: 60 cm^2 uses a wrong base or height.
- Option C: 48 cm^2 has no valid basis here.

Final Answer: Area $= \frac{1}{2} \times 12 \times 9 = 54 \text{ cm}^2 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q24

Q25.

Solution

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

Step 1 — Substitute the values:

$$2 \times \frac{22}{7} \times 14.$$

Step 2 — Cancel 14 with the 7:

$$\frac{14}{7} = 2, \text{ so the expression becomes } 2 \times 22 \times 2.$$

Step 3 — Multiply:

$$2 \times 22 \times 2 = 88 \text{ cm}.$$

Why other options are wrong:

- Option B: 44 cm uses πr instead of $2\pi r$.
- Option C: 96 cm has no valid basis for radius 14.
- Option D: 66 cm uses the wrong multiple.

Final Answer: Circumference $= 2 \times \frac{22}{7} \times 14 = 88$ cm $\Rightarrow$ A

Answer: (A) Go Back to Q25

Q26.

Solution

Concept — Area of a Rectangle: Area = length × width.

Step 1 — Write the two dimensions:

$$\text{Length} = 15, \qquad \text{Width} = 8.$$

Step 2 — Multiply them:

$$15 \times 8 = 120.$$

Step 3 — Write the result with units:

$$\text{Area} = 120 \text{ cm}^2.$$

Why other options are wrong:

- Option A: 100 cm^2 has no valid basis for these sides.
- Option B: 110 cm^2 miscomputes the product.
- Option D: 46 cm^2 is the perimeter, not the area.

Final Answer: Area $= 15 \times 8 = 120$ $\text{cm}^2 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q26

Q27.

Solution

Concept — Volume of a Cuboid: Volume = length $\times$ breadth $\times$ height.

Step 1 — Multiply the length and the breadth:

$$12 \times 5 = 60.$$

Step 2 — Multiply by the height:

$$60 \times 4 = 240.$$

Step 3 — Write the result with units:

$$\text{Volume} = 240 \text{ cm}^3.$$

Why other options are wrong:

- Option A: 120 cm^3 uses only two of the three dimensions.
- Option C: 60 cm^3 multiplies just length and breadth.
- Option D: 300 cm^3 has no valid basis here.

Final Answer: Volume $= 12 \times 5 \times 4 = 240$ $\text{cm}^3 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q27

Q28.

Solution

Concept — Permutations with Repetition: The number of arrangements of n letters, where a letter repeats p times and another repeats q times, is $\dfrac{n!}{p!\,q!}$.

Step 1 — Count the letters in "LEVEL":

$$\text{L, E, V, E, L} \;\Rightarrow\; n = 5.$$

Step 2 — Note the repeats:

$$\text{L appears } 2 \text{ times}, \quad \text{E appears } 2 \text{ times}.$$

Step 3 — Apply the formula:

$$\frac{5!}{2!\,2!} = \frac{120}{2 \times 2}.$$

Step 4 — Simplify:

$$\frac{120}{4} = 30.$$

Why other options are wrong:

- Option A: 120 ignores both repeated letters.
- Option B: 60 divides by only one repeat.
- Option C: 20 divides by too large a factor.

Final Answer: Number of arrangements $= \frac{5!}{2!\,2!} = 30 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q28

Q29.

Solution

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

Step 1 — Substitute $n = 7$, $r = 3$:

$$\binom{7}{3} = \frac{7!}{3!\,4!}.$$

Step 2 — Simplify using $\frac{7 \times 6 \times 5}{3 \times 2 \times 1}$:

$$\frac{7 \times 6 \times 5}{3 \times 2 \times 1} = \frac{210}{6}.$$

Step 3 — Compute:

$$\frac{210}{6} = 35.$$

Why other options are wrong:

- Option B: 21 is $\binom{7}{2}$, choosing 2 not 3.
- Option C: 42 counts ordered selections part-way.
- Option D: 70 is $\binom{8}{4}$, a different choice.

Final Answer: Number of committees $= \binom{7}{3} = 35 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q29

Q30.

Solution

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

Step 1 — List all outcomes of tossing two coins:

$$\{HH,\ HT,\ TH,\ TT\} \ \Rightarrow\ 4 \text{ outcomes.}$$

Step 2 — Identify the favourable outcome (two heads):

$$\{HH\} \ \Rightarrow\ 1 \text{ outcome.}$$

Step 3 — Form the probability:

$$\frac{1}{4}.$$

Why other options are wrong:

- Option A: $\frac{1}{2}$ counts two favourable outcomes.
- Option B: $\frac{1}{3}$ wrongly uses three total outcomes.
- Option D: $\frac{3}{4}$ counts three favourable outcomes.

Final Answer: $P(\text{two heads}) = \frac{1}{4} \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q30

Answer Key

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