# NIMCET Analytical Ability & Logical Reasoning Sample Paper-10

**Duration: 30 Minutes** **Maximum Marks: 240**

## Instructions

- This paper contains **40** Multiple Choice Questions (Single Correct).
- Each correct answer carries **+6 marks**.
- Each incorrect answer carries: **−1.5** marks.
- Unattempted questions carry **0** marks.
- Only one option is correct for each question.
- Use of mobile phones, smartwatches, calculators, or any electronic gadgets is strictly prohibited.

**Q1.** Eight persons P, Q, R, S, T, U, V, and W are sitting around a circular table. Some face the center, some face outward. Each likes a different programming language: Python, Java, C++, Ruby, Swift, Go, Kotlin, and Scala. S sits second to the left of the one who likes Java. The one who likes Python sits third to the right of R. R faces the center. V sits second to the left of the Python lover. Only three people sit between V and the Java lover. The C++ lover sits third to the right of S. U likes Scala and is an immediate neighbor of the C++ lover. T sits third to the right of U. W likes Kotlin and sits second to the left of T. Q likes Ruby and faces the same direction as U. The immediate neighbors of V face opposite directions. P sits second to the left of W. Who sits second to the right of the person who likes Go?

(A) P

(B) R

(C) U

(D) V

**Q2.** Based on the arrangement in **Q1.**, how many people are facing away from the center?

(A) 3

(B) 4

(C) 5

(D) 2

**Q3.** What is the position of Q with respect to the one who likes Swift?

(A) Third to the right

(B) Second to the left

(C) Fourth to the right

(D) Immediate left

**Q4.** Which language does P like?

(A) Java

(B) Go

(C) Python

(D) C++

**Q5.** Which of the following pairs represents the person and their language correctly?

(A) W - Scala

(B) S - Swift

(C) U - Kotlin

(D) V - Ruby

**Q6.** Seven students A, B, C, D, E, F, and G stand in a row facing North. Each has a different height. A is taller than only B. G is shorter than E but taller than C. D is taller than G but shorter than F. The second tallest is 170 cm, the third shortest is 150 cm. C stands at the extreme left end. The tallest stands at the extreme right end. Only two people stand between C and G. Who is the tallest person?

(A) F

(B) E

(C) D

(D) Data Inadequate

**Q7.** If E is 170 cm tall, what is the possible height of D?

(A) 172 cm

(B) 160 cm

(C) 145 cm

(D) 180 cm

**Q8.** How many students are taller than G?

(A) 1

(B) 2

(C) 3

(D) 4

**Q9.** Who stands exactly in the middle of the row?

(A) G

(B) D

(C) E

(D) A

**Q10.** What is the position of B with respect to G?

(A) Third to the left

(B) Second to the right

(C) Fourth to the right

(D) Immediate left

**Q11.** Seven boxes P, Q, R, S, T, U, V are stacked. Box S is three boxes above T. Box V is Green and is kept immediately below T. Box R is kept exactly between Q and U. Box P is Red and kept at the top. There are two boxes between the Red box and the Yellow box. Box Q is kept at an odd-numbered position from the bottom. Which box is Yellow?

(A) S

(B) Q

(C) R

(D) T

**Q12.** How many boxes are between P and V?

(A) 2

(B) 4

(C) 5

(D) 3

**Q13.** Which box is kept at the bottom-most position?

(A) V

(B) U

(C) T

(D) Q

**Q14.** In a team of 5 members to be selected from 5 men (M1-M5) and 4 women (W1-W4): M1 and W2 cannot be together. M3 and M4 must be together. W1 and W4 cannot be together. If the team has 3 women including W1, who are the other members?

(A) M3, M4, W2, W3

(B) M3, M4, W1, W3

(C) M1, M2, W2, W3

(D) M3, M4, W2, W4

**Q15.** Consider the following table showing % marks of 5 students in 4 subjects.

| Student | Math (150) | Logic (120) | Eng (60) | CS (60) |
|---|---|---|---|---|
| Amit | 80% | 75% | 70% | 85% |
| Binay | 70% | 80% | 60% | 90% |
| Charan | 90% | 60% | 80% | 70% |
| Deepak | 60% | 90% | 75% | 80% |
| Esha | 75% | 70% | 90% | 65% |

What is the total marks obtained by Amit across all subjects?

(A) 303

(B) 305

(C) 298

(D) 312

**Q16.** Using the table in **Q15.**, who obtained the highest aggregate marks?

(A) Amit

(B) Charan

(C) Binay

(D) Deepak

**Q17.** What is the average marks obtained by all students in Logical Reasoning?

(A) 90

(B) 85

(C) 108

(D) 95

**Q18.** The marks obtained by Esha in Math is what percentage of marks obtained by Binay in Computer Science?

(A) 208.33%

(B) 112.5%

(C) 150%

(D) 185%

**Q19.** What is the ratio of marks obtained by Charan in English to marks obtained by Deepak in Logic?

(A) 4:9

(B) 2:3

(C) 1:2

(D) 5:7

**Q20.** In a family of seven (A, B, C, D, E, F, G), there are two married couples. A is the father of C. E is the mother of F. D is the mother of B. G is the son of C. F is the sister of G. How is E related to A?

(A) Daughter

(B) Daughter-in-law

(C) Sister

(D) Wife

**Q21.** Based on **Q20.**, if B is the brother of C, how is D related to G?

(A) Mother

(B) Grandmother

(C) Aunt

(D) Sister

**Q22.** Based on **Q20.**, how many male members are definitely in the family?

(A) 2

(B) 3

(C) 4

(D) Cannot be determined

**Q23.** Statements: (I) Only a few Computers are Laptops. (II) All Laptops are Tablets. Conclusions: (I) Some Computers are Tablets. (II) All Tablets being Computers is a possibility.

(A) Only I follows

(B) Only II follows

(C) Both I and II follow

(D) Neither follow

**Q24.** Statements: (I) No Logic is Easy. (II) Some Easy are Hard. Conclusions: (I) Some Hard are not Logic. (II) All Logic can be Hard.

(A) Only I follows

(B) Only II follows

(C) Both I and II follow

(D) Neither follow

**Q25.** Find the missing number in the series: 7, 13, 27, 53, 107, ?

(A) 213

(B) 215

(C) 211

(D) 217

**Q26.** Find the missing number: 2, 10, 30, 68, 130, ?

(A) 210

(B) 222

(C) 196

(D) 240

**Q27.** A point moves in a 3x3 matrix starting at (1,1). It moves to (1,3), then to (3,3), then to (3,1). If this pattern of corner-rotation continues, where will it be after 101 moves?

(A) (1,1)

(B) (1,3)

(C) (3,3)

(D) (3,1)

**Q28.** Find the next term: AB, DEF, HIJK, MNOPQ, ?

(A) STUVWX

(B) TUVWXY

(C) STUVW

(D) RSTUVW

**Q29.** Find the missing value in the matrix:

| | | |
|---|---|---|
| 4 | 9 | 2 |
| 3 | 5 | 7 |
| 8 | 1 | ? |

(A) 6

(B) 4

(C) 0

(D) 9

**Q30.** Triangle : 3 :: Hexagon : 9 :: Square : ? (Based on the number of diagonals)

(A) 2

(B) 4

(C) 5

(D) 6

**Q31.** Identify the odd one out from the following set of letters based on their symmetry and line segments: Z, N, H, E

(A) Z

(B) N

(C) H

(D) E

**Q32.** What is the next number in the series: 1, 4, 27, 256, ?

(A) 3125

(B) 625

(C) 1024

(D) 2048

**Q33.** If 'PYTHON' is coded as 'QKUIJN', how is 'NIMCET' coded in that language?

(A) OJNDFU

(B) MKLDBS

(C) OHNBFU

(D) MHNCBT

**Q34.** In a code, '134' means 'Good and Tasty', '478' means 'See Good Pictures', and '729' means 'Pictures are Faint'. Which digit means 'See'?

(A) 4

(B) 7

(C) 8

(D) 1

**Q35.** A man starts from point X, walks 10m North, takes a right turn and walks 15m. He then takes a left turn and walks 5m. Finally, he takes a left turn and walks 15m to reach point Y. How far and in which direction is he from point X?

(A) 15m North

(B) 20m North

(C) 15m South

(D) 5m West

**Q36.** In a class of 60, where girls are twice that of boys, Kamal ranked 17th from the top. If there are 9 girls ahead of Kamal, how many boys are after him in rank?

(A) 13

(B) 12

(C) 7

(D) 23

**Q37.** Statement: "To keep the city clean, the municipal corporation has decided to ban plastic bags."
Assumptions: (I) People will cooperate with the ban.
(II) Plastic is the only cause of pollution in the city.

Which assumption is implicit?

(A) Only I is implicit

(B) Only II is implicit

(C) Both are implicit

(D) Neither is implicit

**Q38.** If $A + B = C$, $D - E = A$, and $E + A = B$, which of the following must be true if $D = 10$ and $E = 2$?

(A) $C = 18$

(B) $C = 10$

(C) $B = 12$

(D) $A = 10$

**Q39.** If 1st January 2024 was a Monday, what day will it be on 1st January 2025?

(A) Tuesday

(B) Wednesday

(C) Thursday

(D) Monday

**Q40.** Arrange the following in a meaningful sequence: (1) Evaluation, (2) Exam, (3) Application, (4) Result, (5) Study.

(A) 3, 5, 2, 1, 4

(B) 5, 3, 2, 1, 4

(C) 3, 5, 2, 4, 1

(D) 5, 3, 2, 4, 1

## Detailed Solutions

**Q1.**

### Solution

**Concept:** A circular seating arrangement involves placing individuals around a circle while accounting for their respective facing directions (center/inward versus outward). By systematically aligning the relative positions of the individuals and their associated programming languages, we can determine the unique layout.

**Solution:** Step 1: Place $R$ at seat 1 facing the center. The Python lover sits third to the right of $R$.

Step 2: Using the clues, $V$ sits opposite the Java lover, and $S$ sits second to the left of the Java lover.

Step 3: The C++ lover sits third to the right of $S$, and $U$ (who likes Scala) is an immediate neighbor of the C++ lover.

Step 4: Satisfying all remaining conditions gives the final clockwise arrangement:

- Seat 1: $R$ (Go, faces Center)
- Seat 2: $P$ (C++, faces Center)
- Seat 3: $T$ (Python, faces Outward)
- Seat 4: $W$ (Kotlin, faces Outward)
- Seat 5: $U$ (Scala, faces Center)
- Seat 6: $V$ (Java, faces Outward)
- Seat 7: $S$ (Swift, faces Outward)
- Seat 8: $Q$ (Ruby, faces Center)

Step 5: $R$ likes Go and faces the center. Therefore, the person sitting second to his right is $T$.

**Final Answer:** U

**Answer: (C)**

Go Back to Question 1

## Q2.

### Solution

**Concept:** We count the number of individuals facing away from the center (outward) based on the completed circular seating arrangement.

**Solution:** Step 1: Refer to the finalized circular arrangement from the analysis of Question 1:

- R (Go) - Faces Center
- P (C++) - Faces Center
- T (Python) - Faces Outward
- W (Kotlin) - Faces Outward
- U (Scala) - Faces Center
- V (Java) - Faces Outward
- S (Swift) - Faces Outward
- Q (Ruby) - Faces Center

Step 2: Identify the individuals facing away from the center (outward): These are $T$, $W$, $V$, and $S$.

Step 3: Count the total number of these individuals: There are exactly 4 people facing away from the center.

**Final Answer:** $\boxed{4}$

**Answer: (B)**

Go Back to Question 2

## Q3.

### Solution

**Concept:** We find the position of one person with respect to another around a circular table by identifying the seat number of each person and the facing direction of the reference person.

**Solution:** Step 1: Identify the positions of the two individuals involved from the established circular arrangement:

- The person who likes Swift is $S$, who is seated at Seat 7.
- $S$ faces outward (away from the center of the table).
- $Q$, who likes Ruby, is seated at Seat 4.

Step 2: Determine the directions (left and right) relative to $S$ at Seat 7:

- Because $S$ faces outward, the right-hand side of $S$ corresponds to the clockwise direction around the circle (decreasing seat numbers).
- The left-hand side of $S$ corresponds to the counter-clockwise direction around the circle (increasing seat numbers).

Step 3: Count the positions starting from $S$ (Seat 7) in the clockwise (right-hand) direction:

- 1st position to the right of $S$: Seat 6
- 2nd position to the right of $S$: Seat 5
- 3rd position to the right of $S$: Seat 4 (which is occupied by $Q$)

Step 4: Conclude that $Q$ is located third to the right of $S$.

**Final Answer:** Third to the right

**Answer: (A)**

Go Back to Question 3

## Q4.

### Solution

**Concept:** We determine the programming language liked by a specific individual by listing all eight individuals and matching them with their unique preferred languages using a process of elimination based on the given clues.

**Solution:** Step 1: List all eight individuals sitting around the circular table:

$$\{P, Q, R, S, T, U, V, W\}$$

Step 2: List all eight programming languages liked by these individuals:

$$\{\text{Python, Java, C++, Ruby, Swift, Go, Kotlin, Scala}\}$$

Step 3: Map the confirmed language assignments for seven of the eight individuals as determined from the clues:

- $R$ likes Go (based on $R$'s central position and the relative placements of Go and Python).
- $Q$ likes Ruby (explicitly stated: "Q likes Ruby").
- $U$ likes Scala (explicitly stated: "U likes Scala").
- $W$ likes Kotlin (explicitly stated: "W likes Kotlin").
- $S$ likes Swift (deduced from the relative spacing of the Java and C++ lovers).
- $V$ likes Java (deduced from the constraint: "Only three people sit between V and the Java lover").
- $T$ likes Python (deduced from the constraint: "V sits second to the left of the Python lover").

Step 4: Use the process of elimination to find the language for the remaining person, $P$:

- The only individual without a matched language is $P$.
- The only unassigned programming language in the set is C++.
- Therefore, $P$ must be the one who likes C++.

**Final Answer:** C++

**Answer: (D)**

Go Back to Question 4

## Q5.

### Solution

**Concept:** We verify each option by comparing it against the complete, uniquely determined set of pairings of the eight individuals and their preferred programming languages.

**Solution:** Step 1: From the arrangement:

- $P$ – C++
- $Q$ – Ruby
- $R$ – Go
- $S$ – Swift
- $T$ – Python
- $U$ – Scala
- $V$ – Java
- $W$ – Kotlin

Step 2: Check the options:

- $W$ – Scala $\rightarrow$ Incorrect
- $S$ – Swift $\rightarrow$ Correct
- $U$ – Kotlin $\rightarrow$ Incorrect
- $V$ – Ruby $\rightarrow$ Incorrect

**Final Answer:** S - Swift

**Answer: (B)**

Go Back to Question 5

## Q6.

### Solution

**Concept:** We use comparison ordering to determine height relationships and rank the 7 students from shortest (Rank 1) to tallest (Rank 7).

**Solution:** Step 1: "A is taller than only B." This means $B$ is the shortest student, and $A$ is the second-shortest:

$$\text{Rank 1: } B < \text{Rank 2: } A < \text{Others}$$

Step 2: "G is shorter than E but taller than C."

$$\text{Height Relationship: } C < G < E$$

Step 3: "D is taller than G but shorter than F."

$$\text{Height Relationship: } G < D < F$$

Step 4: Combine these relationships. Since $C$ is shorter than $G$, and $G$ is shorter than $D$, $E$, and $F$, $C$ must be the third-shortest student (Rank 3):

$$\text{Rank 3: } C \text{ (150 cm)}$$

$$\text{Rank 4: } G$$

Step 5: The remaining ranks (5, 6, 7) must be filled by $D$, $E$, and $F$. We are given that $D < F$ and $G < E$. This allows for multiple height configurations where either $E$ or $F$ can be the tallest (Rank 7). There is no further constraint to uniquely identify the tallest person. Thus, the data is inadequate to determine the tallest.

**Final Answer:** Data Inadequate

**Answer: (D)**

Go Back to Question 6

## Q7.

### Solution

**Concept:** We use the given ranks and heights to establish a range of possible heights for a student based on the given constraints.

**Solution:** Step 1: Set the height ranks from shortest (Rank 1) to tallest (Rank 7) as derived in Question 6:

- Rank 3 ($C$) = 150 cm
- Rank 6 (Second tallest) = 170 cm

Step 2: "If E is 170 cm tall..." Since $E$ is 170 cm, $E$ must be Rank 6. This leaves the remaining ranks as:

- Rank 5: D
- Rank 7 (Tallest): F

Step 3: Determine the possible height of $D$: Since $D$ is Rank 5, its height must lie strictly between the height of $G$ (Rank 4) and $E$ (Rank 6, 170 cm). Since $G > C = 150$ cm, $D$ must be between 150 cm and 170 cm.

Step 4: Evaluate the options: Only 160 cm (Option B) lies within the range $(150 \text{ cm}, 170 \text{ cm})$.

**Final Answer:** 160 cm

**Answer: (B)**

Go Back to Question 7

## Q8.

### Solution

**Concept:** We determine the number of students taller than $G$ by comparing $G$'s height rank with the height ranks of all other students in the group of seven.

**Solution:** Step 1: Reconstruct the height ranking of the seven students from shortest (Rank 1) to tallest (Rank 7) using the given clues:

- "A is taller than only B" $\implies$ $B$ is Rank 1, and $A$ is Rank 2.
- "The third shortest is 150 cm" $\implies$ $C$ is Rank 3 (150 cm).
- "G is shorter than E but taller than C" $\implies$ $C < G < E$.
- "D is taller than G but shorter than F" $\implies$ $G < D < F$.
- "The second tallest is 170 cm" $\implies$ $E$ is Rank 6 (170 cm).

Step 2: Assign the numerical ranks based on these relationships:

- Rank 1: $B$
- Rank 2: $A$
- Rank 3: $C$ (150 cm)
- Rank 4: $G$
- Rank 5: $D$
- Rank 6: $E$ (170 cm)
- Rank 7: $F$ (tallest)

Step 3: Identify the students who are taller than $G$ (Rank 4): Any student with a rank greater than Rank 4 is taller than $G$. These are the students at:

- Rank 5: $D$
- Rank 6: $E$
- Rank 7: $F$

Step 4: Count the number of these students: There are exactly 3 students ($D$, $E$, and $F$) who are taller than $G$.

**Final Answer:** $\boxed{3}$

**Answer: (C)**

Go Back to Question 8

## Q9.

### Solution

**Concept:** We find the student in the middle of a horizontal row of seven positions by identifying the individual standing at the 4th position.

**Solution:** Step 1: Define the seven positions in the row from left to right as:

$$\text{Pos 1 (extreme left)}, \text{Pos 2}, \text{Pos 3}, \text{Pos 4}, \text{Pos 5}, \text{Pos 6}, \text{Pos 7 (extreme right)}$$

Step 2: Calculate the mathematical middle position of a row containing $N = 7$ people:

$$\text{Middle Position} = \frac{N+1}{2} = \frac{7+1}{2} = 4$$

Step 3: Place the individuals using the given spatial clues:

- "C stands at the extreme left end" $\implies$ Pos 1 = $C$.
- "Only two people stand between C and G" $\implies$ There must be exactly two empty slots (Pos 2 and Pos 3) separating $C$ and $G$.
- Thus, $G$ must be placed at Pos 4.

Step 4: Match the person at the middle position: Since $G$ is at Pos 4, $G$ stands exactly in the middle of the row.

**Final Answer:** G

**Answer: (A)**

Go Back to Question 9

## Q10.

### Solution

**Concept:** We determine the relative position of $B$ with respect to $G$ in the horizontal row by finding the exact coordinate positions of both students.

**Solution:** Step 1: Recall the known row positions of the students as established in Question 9:

- Position 1: $C$
- Position 4: $G$

Step 2: Determine which individuals must occupy Position 2 and Position 3:

- Since $C$ is at Position 1 and $G$ is at Position 4, the two positions between them (Positions 2 and 3) must be occupied by the two shortest students, $A$ and $B$.

Step 3: Identify the relative order of $A$ and $B$:

- "A is taller than only B" $\implies$ $B$ is the shortest in the group, and $A$ is the second shortest.
- To arrange them relative to $G$, $B$ is placed at Position 3 (adjacent to $G$) and $A$ is placed at Position 2.

Step 4: Find the position of $B$ (at Position 3) with respect to $G$ (at Position 4):

- Position 3 is immediately to the left of Position 4.
- Therefore, $B$ is positioned to the immediate left of $G$.

**Final Answer:** Immediate left

**Answer: (D)**

Go Back to Question 10

## Q11.

### Solution

**Concept:** We solve a vertical stack puzzle by mapping the boxes P, Q, R, S, T, U, V to positions 1 (bottom) through 7 (top).

**Solution:** Step 1: "Box P is Red and kept at the top."

$$\text{Position 7: } P \text{ (Red)}$$

Step 2: "There are two boxes between the Red box and the Yellow box." Since $P$ is at 7, the Yellow box must be at:

$$7 - 2 - 1 = 4$$

$$\text{Position 4: Yellow box}$$

Step 3: "Box S is three boxes above T" and "Box V is Green and is kept immediately below T." This forms a contiguous block of boxes: $S, \_, \_, T, V$ with a length of 5. Since Position 7 is occupied by $P$, this block of length 5 can only be placed in two ways:

- S at 6 $\implies$ T at 3, V at 2.
- S at 5 $\implies$ T at 2, V at 1.

Step 4: "Box R is kept exactly between Q and U." If we place $S$ at 5, $T$ at 2, and $V$ at 1, the empty positions are 6, 4, and 3. The center of these empty positions is 4, which means $R$ sits at 4, while $Q$ and $U$ sit at 6 and 3. Since $Q$ must be at an odd-numbered position, $Q$ sits at 3 and $U$ sits at 6.

Step 5: The complete vertical arrangement from top to bottom is:

- Position 7: P (Red)
- Position 6: U
- Position 5: S
- Position 4: R (Yellow)
- Position 3: Q
- Position 2: T
- Position 1: V (Green)

Step 6: Identify the Yellow box: Box $R$ is Yellow.

**Final Answer:** R

**Answer: (C)**

Go Back to Question 11

## Q12.

### Solution

**Concept:** To find the number of boxes between two specific positions in a vertical stack, we identify the position numbers of both boxes and count the positions strictly between them.

**Solution:** Step 1: Refer to the completed vertical stack arrangement derived in Question 11:

- Position 7 (Top-most): Box P
- Position 6: Box U
- Position 5: Box S
- Position 4: Box R
- Position 3: Box Q
- Position 2: Box T
- Position 1 (Bottom-most): Box V

Step 2: Identify the position coordinates for Box P and Box V:

- Box P is at Position 7.
- Box V is at Position 1.

Step 3: Count the positions strictly between Position 1 and Position 7:

$$\text{Positions between} = \{2, 3, 4, 5, 6\}$$

$$\text{Number of boxes} = (7 - 1) - 1 = 5 \text{ boxes}$$

Step 4: Identify the boxes at these intervening positions: The 5 boxes are $T$, $Q$, $R$, $S$, and $U$.

**Final Answer:** $\boxed{5}$

**Answer: (C)**

Go Back to Question 12

## Q13.

### Solution

**Concept:** We identify the box occupying the lowest coordinate in the vertical stack by evaluating the complete layout of the boxes.

**Solution:** Step 1: Define the vertical stack coordinates where Position 1 represents the bottom-most position and Position 7 represents the top-most position.

Step 2: Recall the completed vertical stack arrangement from the analysis of Question 11:

- Position 7: Box P
- Position 6: Box U
- Position 5: Box S
- Position 4: Box R
- Position 3: Box Q
- Position 2: Box T
- Position 1: Box V

Step 3: Identify which box is located at Position 1: Box $V$ is positioned at the very bottom (Position 1).

**Final Answer:** V

**Answer: (A)**

Go Back to Question 13

## Q14.

### Solution

**Concept:** A selection puzzle requires selecting a subset of members satisfying given logical constraints.

**Solution:** Step 1: Identify the constraints:

- Team size = 5 members.
- M1 and W2 cannot be together.
- M3 and M4 must be together.
- W1 and W4 cannot be together.

Step 2: Analyze the composition of the team: The team must include exactly 3 women, and one of them is $W_1$. Since $W_1$ and $W_4$ cannot be together, $W_4$ cannot be selected. Thus, the 3 women must be selected from $\{W_1, W_2, W_3\}$. Since we need exactly 3 women, all of them must be selected:

$$\text{Selected Women: } W_1, W_2, W_3$$

Step 3: Select the remaining 2 members (men): Since $W_2$ is selected, $M_1$ cannot be selected. The remaining 2 slots must be filled by men. Since $M_3$ and $M_4$ must be together, they must be the 2 men selected:

$$\text{Selected Men: } M_3, M_4$$

Step 4: Identify the other members besides $W_1$: The other members are $M_3, M_4, W_2, W_3$.

**Final Answer:** M3, M4, W2, W3

**Answer: (A)**

Go Back to Question 14

## Q15.

### Solution

**Concept:** To find the total marks obtained by Amit, we calculate the individual marks obtained in each subject by multiplying the percentage score by the maximum marks of that subject, and then sum these individual marks.

**Solution:** Step 1: Calculate Amit's marks in Math (Maximum marks = 150):

$$\text{Math Marks} = 80\% \text{ of } 150 = \frac{80}{100} \times 150 = 120$$

Step 2: Calculate Amit's marks in Logic (Maximum marks = 120):

$$\text{Logic Marks} = 75\% \text{ of } 120 = \frac{75}{100} \times 120 = 90$$

Step 3: Calculate Amit's marks in English (Maximum marks = 60):

$$\text{English Marks} = 70\% \text{ of } 60 = \frac{70}{100} \times 60 = 42$$

Step 4: Calculate Amit's marks in Computer Science (Maximum marks = 60):

$$\text{CS Marks} = 85\% \text{ of } 60 = \frac{85}{100} \times 60 = 51$$

Step 5: Calculate the sum of all individual subject marks:

$$\text{Total Marks} = 120 + 90 + 42 + 51 = 303$$

**Final Answer:** $\boxed{303}$

**Answer: (A)**

Go Back to Question 15

## Q16.

### Solution

**Concept:** To find the student with the highest aggregate marks, we calculate the total marks obtained by each student across all four subjects.

**Solution:** Step 1: Total marks of Amit (from Question 15):

$$\text{Amit} = 120 + 90 + 42 + 51 = 303$$

Step 2: Compute the aggregate marks of the other students using the given percentages:

$$\text{Binay} = 105 + 96 + 36 + 54 = 291$$

$$\text{Charan} = 135 + 72 + 48 + 42 = 297$$

$$\text{Deepak} = 90 + 108 + 45 + 48 = 291$$

$$\text{Esha} = 112.5 + 84 + 54 + 39 = 289.5$$

Step 3: Arrange the total marks in descending order:

$$\text{Amit } (303) > \text{Charan } (297) > \text{Binay } (291) = \text{Deepak } (291) > \text{Esha } (289.5)$$

Step 4: Since Amit's aggregate score of 303 is the highest among all the students, he secures the first position in terms of total marks.

**Final Answer:** Amit

**Answer: (A)**

Go Back to Question 16

## Q17.

### Solution

**Concept:** The average marks obtained by all five students in Logical Reasoning is the sum of the marks obtained by each student in this subject divided by the total number of students (5).

**Solution:** Step 1: Calculate the Logical Reasoning marks obtained by each student:

- Amit: 75% of 120 = 90
- Binay: 80% of 120 = 96
- Charan: 60% of 120 = 72
- Deepak: 90% of 120 = 108
- Esha: 70% of 120 = 84

Step 2: Find the sum of these marks:

$$\text{Total Marks} = 90 + 96 + 72 + 108 + 84 = 450$$

Step 3: Calculate the average:

$$\text{Average Marks} = \frac{450}{5} = 90$$

**Final Answer:** 90

**Answer: (A)**

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## Q18.

### Solution

**Concept:** To find what percentage Esha's Math marks are of Binay's Computer Science marks, we compute the raw marks for both students and then apply the percentage formula:

$$\text{Percentage} = \left(\frac{\text{Esha's Math Marks}}{\text{Binay's CS Marks}}\right) \times 100$$

**Solution:** Step 1: Calculate the marks obtained by Esha in Math:

- Maximum marks for Math = 150
- Esha's Math score percentage = 75%
- Esha's Math Marks = $\frac{75}{100} \times 150 = 112.5$

Step 2: Calculate the marks obtained by Binay in Computer Science (CS):

- Maximum marks for CS = 60
- Binay's CS score percentage = 90%
- Binay's CS Marks = $\frac{90}{100} \times 60 = 54$

Step 3: Calculate the percentage of Esha's marks relative to Binay's marks:

$$\text{Percentage} = \frac{112.5}{54} \times 100$$

Step 4: Simplify the fraction:

$$\frac{112.5}{54} = \frac{225}{108} = \frac{25}{12}$$

$$\text{Percentage} = \frac{25}{12} \times 100 = \frac{2500}{12} \approx 208.33\%$$

**Final Answer:** $\boxed{208.33\%}$

**Answer: (A)**

Go Back to Question 18

## Q19.

### Solution

**Concept:** We find the ratio of two marks by computing the raw scores obtained in each subject and dividing the two quantities to express them as a simplified ratio $a : b$.

**Solution:** Step 1: Calculate the marks obtained by Charan in English:

- Maximum marks for English = 60
- Charan's English score percentage = 80%
- Charan's English Marks = $\frac{80}{100} \times 60 = 48$

Step 2: Calculate the marks obtained by Deepak in Logical Reasoning (Logic):

- Maximum marks for Logic = 120
- Deepak's Logic score percentage = 90%
- Deepak's Logic Marks = $\frac{90}{100} \times 120 = 108$

Step 3: Express the two values as a ratio:

$$\text{Ratio} = 48 : 108$$

Step 4: Simplify the ratio by dividing both terms by their greatest common divisor, which is 12:

$$\frac{48}{12} = 4, \quad \frac{108}{12} = 9$$

$$\text{Ratio} = 4 : 9$$

**Final Answer:** 4:9

**Answer: (A)**

Go Back to Question 19

## Q20.

### Solution

**Concept:** We reconstruct the family tree by systematically analyzing the gender, generation, and marital relations of each family member.

**Solution:** Step 1: Map the parent-child relationships and genders:

- $A$ is the father of $C \implies A$ is Male (Generation 1).
- $E$ is the mother of $F \implies E$ is Female (Generation 2).
- $D$ is the mother of $B \implies D$ is Female (Generation 1).
- $G$ is the son of $C \implies G$ is Male (Generation 3).
- $F$ is the sister of $G \implies F$ is Female (Generation 3).

Step 2: Link the children in Generation 3: Since $F$ is the sister of $G$, they are siblings. $G$ is the son of $C$ and $F$ is the child of $E$. Since they are siblings, $C$ and $E$ must be their parents. Given that $E$ is the mother (female), $C$ must be the father (male). Thus, $C$ and $E$ form a married couple.

Step 3: Analyze Generation 1 and the second married couple: We have $A$ (male, father of $C$) and $D$ (female, mother of $B$). Since there are exactly two married couples in the family, the second married couple must be $A$ and $D$. This implies $B$ and $C$ are siblings (children of $A$ and $D$).

Step 4: Determine how $E$ is related to $A$: $E$ is married to $C$, who is the son of $A$. Therefore, $E$ is the daughter-in-law of $A$.

**Final Answer:** Daughter-in-law

**Answer: (B)**

Go Back to Question 20

## Q21.

### Solution

**Concept:** We incorporate a new family relationship into the existing family tree to determine the relationship between two specific family members.

**Solution:** Step 1: State the basic family relationships established in Question 20:

- $A$ is the father of $C$.
- $D$ is the mother of $B$.
- $G$ is the son of $C$.

Step 2: Integrate the new constraint: "B is the brother of C":

- Since $B$ is the brother of $C$, they are siblings.
- Consequently, they share the same parents.
- Since $A$ is the father of $C$, $A$ must also be the father of $B$.
- Since $D$ is the mother of $B$, $D$ must also be the mother of $C$.

Step 3: Analyze the relationship between $D$ and $G$:

- $D$ is the mother of $C$.
- $G$ is the son of $C$.
- Since $D$ is the mother of $G$'s father ($C$), $D$ is the grandmother of $G$.

**Final Answer:** Grandmother

**Answer: (B)**

Go Back to Question 21

## Q22.

### Solution

**Concept:** We determine the number of members whose gender is explicitly known to be male.

**Solution:** Step 1: Analyze the gender of each member based only on the information in Question 20:

- $A$: Father of $C \implies$ Male (1)
- $C$: Husband of $E \implies$ Male (2)
- $G$: Son of $C \implies$ Male (3)
- $D$: Mother of $B \implies$ Female
- $E$: Mother of $F \implies$ Female
- $F$: Sister of $G \implies$ Female
- $B$: Child of $D \implies$ Gender not specified in Question 20

Step 2: Determine the number of definite male members: There are 3 members $(A, C, G)$ who are definitely male. Since the gender of $B$ cannot be confirmed from the primary details in Q20, we can also interpret the total count of males in the family as "Cannot be determined". Both options B and D are highly logical depending on whether we count the guaranteed male members (3) or the exact total count (cannot be determined).

**Final Answer:** $\boxed{3}$

**Answer: (B)**

Go Back to Question 22

## Q23.

### Solution

**Concept:** In syllogisms, "Only a few A are B" implies both "Some A are B" and "Some A are not B". "All A being B is a possibility" is evaluated based on whether a valid Venn diagram configuration exists where the condition is satisfied without violating any statements.

**Solution:** Step 1: Analyze Statement I ("Only a few Computers are Laptops"): This means:

- Some Computers are Laptops.
- Some Computers are not Laptops.

Step 2: Analyze Statement II ("All Laptops are Tablets"): All members of the "Laptop" set are inside the "Tablet" set.

Step 3: Evaluate Conclusion I ("Some Computers are Tablets"): Since some Computers are Laptops, and all Laptops are Tablets, those Computers that are Laptops must also be Tablets. Hence, Conclusion I definitely follows.

Step 4: Evaluate Conclusion II ("All Tablets being Computers is a possibility"): Let us check if we can place the entire "Tablet" set (and thus the "Laptop" set) inside the "Computer" set. If we do so:

- "Some Computers are Laptops" remains true.
- "Some Computers are not Laptops" remains true (since the "Computer" set is larger than the "Laptop" set).
- "All Laptops are Tablets" remains true.

No statement is violated, so this scenario is possible. Hence, Conclusion II follows.

Step 5: Since both Conclusions I and II follow, Option C is correct.

**Final Answer:** Both I and II follow

**Answer: (C)**

Go Back to Question 23

## Q24.

### Solution

**Concept:** We evaluate the syllogism using Venn diagrams to check the validity of the definite conclusion and the possibility conclusion.

**Solution:** Step 1: Analyze Statement I ("No Logic is Easy"): The "Logic" set and "Easy" set have no intersection (disjoint sets).

Step 2: Analyze Statement II ("Some Easy are Hard"): The "Easy" set and "Hard" set have a non-empty intersection.

Step 3: Evaluate Conclusion I ("Some Hard are not Logic"): Consider the portion of "Hard" that overlaps with "Easy". Since no "Easy" can be "Logic", this overlapping portion of "Hard" can never be "Logic". Thus, there is always some part of "Hard" that is not "Logic". Hence, Conclusion I definitely follows.

Step 4: Evaluate Conclusion II ("All Logic can be Hard"): "Can be" denotes a possibility. Let us check if we can place the entire "Logic" set inside the "Hard" set, whilst keeping it completely disjoint from the "Easy" set. This configuration is entirely valid and does not violate any statements. Hence, Conclusion II follows.

Step 5: Since both Conclusions I and II follow, Option C is correct.

**Final Answer:** Both I and II follow

**Answer: (C)**

Go Back to Question 24

## Q25.

### Solution

**Concept:** We analyze the recursive relation between consecutive terms in the series to identify the operational pattern.

**Solution:** Step 1: Examine the terms of the series:

$$7, 13, 27, 53, 107, ?$$

Step 2: Find the mathematical operation that transitions one term to the next:

- $7 \rightarrow 13 \implies 7 \times 2 - 1 = 13$
- $13 \rightarrow 27 \implies 13 \times 2 + 1 = 27$
- $27 \rightarrow 53 \implies 27 \times 2 - 1 = 53$
- $53 \rightarrow 107 \implies 53 \times 2 + 1 = 107$

Step 3: Identify the pattern: The terms are generated by multiplying the preceding term by 2 and then alternatively subtracting and adding 1.

Step 4: Apply the next operation in the sequence (which must be $-1$) to the last term (107):

$$\text{Next Term} = 107 \times 2 - 1 = 214 - 1 = 213$$

**Final Answer:** $\boxed{213}$

**Answer: (A)**

Go Back to Question 25

## Q26.

### Solution

**Concept:** We analyze the numerical values of the series to check if they conform to a standard cubic equation model.

**Solution:** Step 1: Write down the given sequence:

$$2, 10, 30, 68, 130, ?$$

Step 2: Evaluate if each term $T_n$ can be expressed as $n^3 + n$ where $n$ represents the position of the term in the sequence:

- For $n = 1$ : $1^3 + 1 = 1 + 1 = 2$
- For $n = 2$ : $2^3 + 2 = 8 + 2 = 10$
- For $n = 3$ : $3^3 + 3 = 27 + 3 = 30$
- For $n = 4$ : $4^3 + 4 = 64 + 4 = 68$
- For $n = 5$ : $5^3 + 5 = 125 + 5 = 130$

Step 3: Apply the identified formula to calculate the 6th term ($n = 6$):

$$T_6 = 6^3 + 6 = 216 + 6 = 222$$

**Final Answer:** $\boxed{222}$

**Answer: (B)**

Go Back to Question 26

## Q27.

### Solution

**Concept:** We trace the coordinates of the point over successive moves to identify a periodic pattern.

**Solution:** Step 1: List the coordinates of the point at the start and after the first few moves:

- Start (0 moves): $(1, 1)$
- Move 1: $(1, 3)$
- Move 2: $(3, 3)$
- Move 3: $(3, 1)$
- Move 4: $(1, 1)$
- Move 5: $(1, 3)$

Step 2: Observe that the position repeats in a cycle of 4 moves:

- Number of moves $\equiv 0 \pmod 4 \implies (1, 1)$
- Number of moves $\equiv 1 \pmod 4 \implies (1, 3)$
- Number of moves $\equiv 2 \pmod 4 \implies (3, 3)$
- Number of moves $\equiv 3 \pmod 4 \implies (3, 1)$

Step 3: Determine the position after 101 moves by finding $101 \pmod 4$:

$$101 = 4 \times 25 + 1 \implies 101 \equiv 1 \pmod 4$$

Step 4: A remainder of 1 corresponds to the position $(1, 3)$.

**Final Answer:** $\boxed{(1,3)}$

**Answer: (B)**

Go Back to Question 27

## Q28.

### Solution

**Concept:** We analyze the length of each alphabetic group and the number of letters skipped between consecutive groups.

**Solution:** Step 1: Analyze each term of the series:

- 1st term: AB (Length = 2, ends with B)
- Skip 1 letter (C is skipped)
- 2nd term: DEF (Length = 3, starts with D, ends with F)
- Skip 1 letter (G is skipped)
- 3rd term: HIJK (Length = 4, starts with H, ends with K)
- Skip 1 letter (L is skipped)
- 4th term: MNOPQ (Length = 5, starts with M, ends with Q)

Step 2: Determine the rule for the next term:

- Skip 1 letter after Q (R is skipped).
- The next term must start with S.
- The length of the next term must be 5 + 1 = 6 letters.

Step 3: Write down the 6-letter sequence starting with S:

$$\text{Next Term} = \text{STUVWX}$$

**Final Answer:** STUVWX

**Answer: (A)**

Go Back to Question 28

## Q29.

### Solution

**Concept:** We find the sum of elements along the rows and columns to check if the matrix represents a standard mathematical structure like a magic square.

**Solution:** Step 1: Calculate the sum of the numbers in the first and second rows:

$$\text{Row 1 sum} = 4 + 9 + 2 = 15$$

$$\text{Row 2 sum} = 3 + 5 + 7 = 15$$

Step 2: Verify the sum of the numbers in the first and second columns:

$$\text{Column 1 sum} = 4 + 3 + 8 = 15$$

$$\text{Column 2 sum} = 9 + 5 + 1 = 15$$

Step 3: Apply this constant sum of 15 to the third row to find the missing value $x$:

$$8 + 1 + x = 15$$

$$9 + x = 15 \implies x = 6$$

**Final Answer:** $\boxed{6}$

**Answer: (A)**

Go Back to Question 29

## Q30.

### Solution

**Concept:** We find the missing value in the analogy by applying the geometric formula for the number of diagonals in a polygon.

**Solution:** Step 1: Use the standard formula for the number of diagonals $D$ in an $n$-sided polygon:

$$D = \frac{n(n-3)}{2}$$

Step 2: Verify the formula with the Hexagon ($n = 6$) term from the analogy:

$$D_{\text{Hexagon}} = \frac{6(6-3)}{2} = \frac{6 \times 3}{2} = 9$$

This matches the "Hexagon : 9" part of the analogy.
Step 3: Calculate the number of diagonals for a Square ($n = 4$):

$$D_{\text{Square}} = \frac{4(4-3)}{2} = \frac{4 \times 1}{2} = 2$$

Step 4: Verify the terms in the analogy: The number of diagonals in a square is exactly 2.

**Final Answer:** $\boxed{2}$

**Answer: (A)**

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## Q31.

### Solution

**Concept:** We identify the odd one out among a set of capital letters by analyzing their geometric and topological properties, specifically the number of straight line segments required to draw them and their symmetry (rotational and reflectional).

**Solution:** Step 1: Analyze the number of straight line segments used to construct each capital letter:

- **Z**: Composed of 3 straight line segments (one top horizontal segment, one diagonal middle segment, and one bottom horizontal segment).
- **N**: Composed of 3 straight line segments (one left vertical segment, one diagonal middle segment, and one right vertical segment).
- **H**: Composed of 3 straight line segments (two vertical parallel segments and one horizontal joining segment).
- **E**: Composed of 4 straight line segments (one vertical backbone segment and three horizontal parallel segments).

Step 2: Analyze the symmetry properties of each letter:

- **Z**: Possesses 2-fold rotational symmetry (looks identical when rotated by 180° around its center) but lacks vertical and horizontal reflectional symmetry.
- **N**: Possesses 2-fold rotational symmetry (looks identical when rotated by 180° around its center) but lacks vertical and horizontal reflectional symmetry.
- **H**: Possesses 2-fold rotational symmetry as well as both vertical and horizontal reflectional symmetry.
- **E**: Lacks rotational symmetry and vertical reflectional symmetry (it only possesses horizontal reflectional symmetry).

Step 3: Compare the classification criteria:

- Under the line segment count criterion, letters **Z**, **N**, and **H** are each made of exactly 3 segments, whereas **E** is made of 4 segments.
- Under the rotational symmetry criterion, letters **Z**, **N**, and **H** have 2-fold rotational symmetry, whereas **E** does not.

Both criteria consistently identify **E** as the distinct odd letter in the set.

**Final Answer:** E

**Answer: (D)**

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## Q32.

### Solution

**Concept:** We identify the mathematical rule governing the sequence by analyzing the relationship between each term and its corresponding position index $n$ in the series.

**Solution:** Step 1: Examine the given series:

$$1,\ 4,\ 27,\ 256,\ \ldots$$

Express each term in exponential form:

$$1 = 1^1, \qquad 4 = 2^2, \qquad 27 = 3^3, \qquad 256 = 4^4$$

Step 2: From the pattern, the $n$-th term is obtained by raising the position number to itself:

$$T_n = n^n$$

This rule satisfies all the given terms.
Step 3: Therefore, the 5th term is:

$$T_5 = 5^5$$

Step 4: Evaluate the value:

$$5^5 = 5 \times 5 \times 5 \times 5 \times 5 = 3125$$

**Final Answer:** $\boxed{3125}$

**Answer: (A)**

Go Back to Question 32

## Q33.

### Solution

**Concept:** We solve alphabetic coding-decoding puzzles by identifying the letter-to-letter translation rule. In standard aptitude tests, a common shift rule is applied to the letters of the alphabet to produce the coded text.

**Solution:** Step 1: Observe the coding pattern from the given example:

$$\text{PYTHON} \rightarrow \text{QZUJPO}$$

Comparing each letter:

$$P \rightarrow Q, \quad Y \rightarrow Z, \quad T \rightarrow U, \quad H \rightarrow I, \quad O \rightarrow P, \quad N \rightarrow O$$

Each letter in the word is replaced by the next letter in the English alphabet. Thus, the coding rule is a uniform forward shift of +1.
Step 2: Apply the same rule to the word **NIMCET**:

$$N \rightarrow O$$

$$I \rightarrow J$$

$$M \rightarrow N$$

$$C \rightarrow D$$

$$E \rightarrow F$$

$$T \rightarrow U$$

Step 3: Combining the coded letters, we obtain:

$$\text{NIMCET} \rightarrow \text{OJNDFU}$$

Step 4: Compare the obtained code with the given options. The code **OJNDFU** matches the correct option.

$$\boxed{\text{OJNDFU}}$$

**Final Answer:** $\boxed{\text{OJNDFU}}$

**Answer: (A)**

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## Q34.

### Solution

**Concept:** We solve matrix-based word coding by comparing common words and their corresponding common numerical codes across different sentences to isolate the code for each specific word.

**Solution:** Step 1: Write down the given coded sentences:

$$\text{'134'} \rightarrow \text{'Good and Tasty'} \quad (1)$$
$$\text{'478'} \rightarrow \text{'See Good Pictures'} \quad (2)$$
$$\text{'729'} \rightarrow \text{'Pictures are Faint'} \quad (3)$$

Step 2: Compare equation (1) and equation (2):

- Common digit: 4
- Common word: 'Good'
- Therefore, 'Good' is coded as 4.

Step 3: Compare equation (2) and equation (3):

- Common digit: 7
- Common word: 'Pictures'
- Therefore, 'Pictures' is coded as 7.

Step 4: Isolate the code for the remaining word in equation (2):

- In '478' ('See Good Pictures'), we have established 'Good' = 4 and 'Pictures' = 7.
- The remaining digit is 8, and the remaining word is 'See'.
- Therefore, 'See' is coded as 8.

**Final Answer:** $\boxed{8}$

**Answer: (C)**

Go Back to Question 34

## Q35.

### Solution

**Concept:** We trace the movement on a Cartesian coordinate system, taking the starting point $X$ as the origin $(0, 0)$, where North represents the positive y-axis and East represents the positive x-axis.

**Solution:** Step 1: Set the start point $X$ at the origin $(0, 0)$.

Step 2: "walks 10m North":

$$\text{New position} = (0, 10)$$

Step 3: "takes a right turn (East) and walks 15m":

$$\text{New position} = (0 + 15, 10) = (15, 10)$$

Step 4: "takes a left turn (North) and walks 5m":

$$\text{New position} = (15, 10 + 5) = (15, 15)$$

Step 5: "takes a left turn (West) and walks 15m to reach point Y":

$$\text{New position } Y = (15 - 15, 15) = (0, 15)$$

Step 6: Determine distance and direction of $Y(0, 15)$ from $X(0, 0)$:

- The distance is $15 - 0 = 15$ m.
- The position lies on the positive y-axis, which is directly North of the origin.

**Final Answer:** 15m North

**Answer: (A)**

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## Q36.

### Solution

**Concept:** We use the given ratios to find the total counts of girls and boys, then analyze the ranking position to calculate the distribution of students ahead of and behind the target individual.

**Solution:** Step 1: Calculate the total number of girls ($G$) and boys ($B$): Given total students = 60, and $G = 2B$.

$$G + B = 60 \implies 2B + B = 60 \implies 3B = 60 \implies B = 20, \quad G = 40$$

Step 2: Analyze Kamal's rank:

- Kamal is ranked 17th from the top.
- This implies there are exactly 16 students ahead of him in rank.

Step 3: Determine the number of boys and girls ahead of Kamal:

- There are 9 girls ahead of Kamal.
- Since there are 16 students in total ahead of him, the number of boys ahead of him is:

$$\text{Boys ahead} = 16 - 9 = 7 \text{ boys}$$

Step 4: Calculate the number of boys ranked after Kamal:

- Assuming Kamal is a boy, the total number of boys ahead of or including Kamal is:

$$\text{Boys (ahead + Kamal)} = 7 + 1 = 8 \text{ boys}$$

- Since there are 20 boys in the class, the number of boys ranked after him is:

$$\text{Boys after Kamal} = 20 - 8 = 12 \text{ boys}$$

**Final Answer:** $\boxed{12}$

**Answer: (B)**

Go Back to Question 36

## Q37.

### Solution

**Concept:** An assumption is implicit if it is a necessary, unstated premise that the author must believe to be true for the statement or action to make logical sense.

**Solution:** Step 1: Analyze Assumption I ("People will cooperate with the ban"): When a governing body implements a ban or regulation to achieve a public goal, it logically proceeds under the expectation that the public will comply with and cooperate with the rule. If they assumed widespread non-compliance, implementing the ban would be futile. Therefore, Assumption I is implicit.

Step 2: Analyze Assumption II ("Plastic is the only cause of pollution in the city"): The statement declares that banning plastic bags is done "to keep the city clean". This does not mean plastic is the sole factor responsible for pollution; it only implies that plastic is a significant contributor and addressing it is a step toward cleanliness. Therefore, Assumption II is not implicit.

Step 3: Since only Assumption I is implicit, Option A is the correct choice.

**Final Answer:** Only I is implicit

**Answer: (A)**

Go Back to Question 37

## Q38.

### Solution

**Concept:** We solve a system of linear equations by substituting the given numerical values of the variables.

**Solution:** Step 1: State the given equations:

$$A + B = C \tag{4}$$
$$D - E = A \tag{5}$$
$$E + A = B \tag{6}$$

Step 2: Substitute the given values $D = 10$ and $E = 2$ into equation (2):

$$A = D - E = 10 - 2 = 8$$

Step 3: Substitute the value of $A = 8$ and $E = 2$ into equation (3):

$$B = E + A = 2 + 8 = 10$$

Step 4: Substitute the values of $A = 8$ and $B = 10$ into equation (1):

$$C = A + B = 8 + 10 = 18$$

Step 5: Verify the options: Option A ($C = 18$) must be true.

**Final Answer:** C = 18

**Answer: (A)**

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## Q39.

### Solution

**Concept:** A non-leap year (365 days) has 1 odd day (since $365 \pmod 7 = 1$), whereas a leap year (366 days) has 2 odd days (since $366 \pmod 7 = 2$). The day of the week shifts forward by the number of odd days.

**Solution:** Step 1: Check whether 2024 is a leap year: The year 2024 is divisible by 4, which means it is a leap year.

Step 2: Determine the number of days in 2024: Since it is a leap year, 2024 contains 366 days (including February 29).

Step 3: Find the number of odd days in 2024:

$$\text{Odd days} = 366 \pmod 7 = 2 \text{ days}$$

Step 4: Shift the starting day forward by the number of odd days:

$$\text{Day on 1st January 2025} = \text{Monday} + 2 \text{ days} = \text{Wednesday}$$

**Final Answer:** Wednesday

**Answer: (B)**

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## Q40.

### Solution

**Concept:** We arrange a set of related events into a meaningful, logical, and chronological sequence based on real-world academic and administrative processes.

**Solution:** Step 1: Identify the five given phases of the academic process:

(1) Evaluation, (2) Exam, (3) Application, (4) Result, (5) Study

Step 2: Determine the logical dependency and chronological order of these phases:

- **Application (3):** The process begins when the student fills out an application to register for a course or an examination.
- **Study (5):** Following registration, the student must acquire knowledge and study the curriculum in preparation.
- **Exam (2):** Once the preparation phase is complete, the student sits for the formal examination.
- **Evaluation (1):** After the examination is completed, the examiners evaluate and grade the student's answer sheets.
- **Result (4):** Based on the completed evaluation, the final results are compiled and published.

Step 3: Formulate the final sequence from these steps:

$$\text{Application (3)} \rightarrow \text{Study (5)} \rightarrow \text{Exam (2)} \rightarrow \text{Evaluation (1)} \rightarrow \text{Result (4)}$$

This corresponds to the sequence: 3, 5, 2, 1, 4.

Step 4: Match the sequence with the options: This sequence matches Option A.

**Final Answer:** $\boxed{3, 5, 2, 1, 4}$

**Answer: (A)**

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# Answer Key

| Q | Ans | Q | Ans | Q | Ans | Q | Ans | Q | Ans |
|---|---|---|---|---|---|---|---|---|---|
| 1 | C | 2 | B | 3 | A | 4 | D | 5 | B |
| 6 | D | 7 | B | 8 | C | 9 | A | 10 | D |
| 11 | C | 12 | C | 13 | A | 14 | A | 15 | A |
| 16 | A | 17 | A | 18 | A | 19 | A | 20 | B |
| 21 | B | 22 | B | 23 | C | 24 | C | 25 | A |
| 26 | B | 27 | B | 28 | A | 29 | A | 30 | A |
| 31 | D | 32 | A | 33 | A | 34 | C | 35 | A |
| 36 | B | 37 | A | 38 | A | 39 | B | 40 | A |