Bihar B.Ed CET Logical & Analytical Reasoning

Sample Paper – 6

Duration: 25 Minutes **Maximum Marks: 25**

Instructions

- This paper contains **25** Multiple Choice Questions (Single Correct Answer), modelled on the Logical & Analytical Reasoning section of **Bihar B.Ed CET**.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct. Choose carefully.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.
- Rough work may be done in the margin of the question paper.

Q1. Find the missing term in the series: $2,\ 6,\ 12,\ 20,\ 30,\ \_\_\_\_\_$

(A) 36

(B) 40

(C) 42

(D) 44

Q2. Find the next pair in the series: AZ, BY, CX, DW, _____

(A) EU

(B) EV

(C) FW

(D) EW

Q3. Choose the correct analogy:

Doctor : **Hospital** :: **Teacher** : _____

(A) Office

(B) Library

(C) Court

(D) School

Q4. Choose the correct analogy:

6 : 36 :: 8 : _____

(A) 64

(B) 48

(C) 16

(D) 32

Q5. Which of the following is the **odd one out**?

(A) Delhi

(B) London

(C) Kolkata

(D) Patna

Q6. In a code, letters are replaced by their positional values (A = 1, B = 2, . . . , Z = 26). If CAR is coded as 3-1-18, what is the code for BUS?

(A) 2-20-18

(B) 3-21-20

(C) 2-20-19

(D) 2-21-19

Q7. In a certain code TRAIN is written as SQZHM (each letter shifted one position backward, with A wrapping to Z). Using the same code, how will PLANE be written?

(A) PKZME

(B) QLZMF

(C) OKZMD

(D) PKZNF

Q8. Anita is the daughter of Kavita's only sister's husband's mother. How is Anita related to Kavita?

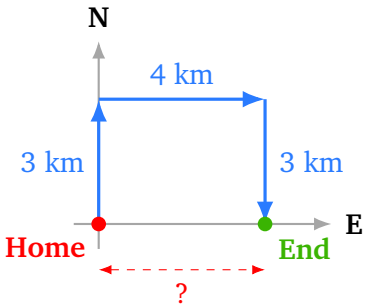
(A) Cousin

(B) Niece

(C) Sister

(D) Aunt

Q9. A man starts from home, walks **3 km North**, then **4 km East**, then **3 km South**. How far is he from his starting point?



(A) 3 km

(B) 4 km

(C) 5 km

(D) 7 km

Q10. In a class of **45 students**, Amit is **18th from the top**. What is his position from the **bottom**?

(A) 26th

(B) 27th

(C) 28th

(D) 29th

Q11. Statements:

No pen is a pencil.

All pencils are stationery items.

Conclusions:

I. No pen is a stationery item.

II. Some stationery items are not pens.

Which of the following is correct?

(A) Only Conclusion I follows

(B) Only Conclusion II follows

(C) Both Conclusions I and II follow

(D) Neither Conclusion I nor Conclusion II follows

Q12. Statements:

All books are novels.

Some novels are thrillers.

Conclusions:

I. Some books are thrillers.

II. All thrillers are books.

Which of the following is correct?

(A) Only Conclusion I follows

(B) Only Conclusion II follows

(C) Both Conclusions I and II follow

(D) Neither Conclusion I nor Conclusion II follows

Q13. Statement: "Sleep at least 7 hours daily for good health."

Conclusions:

I. Adequate sleep is important for health.

II. People who sleep less than 7 hours are always unhealthy.

Which conclusion(s) follow?

(A) Only Conclusion II follows

(B) Both Conclusions I and II follow

(C) Only Conclusion I follows

(D) Neither Conclusion I nor Conclusion II follows

Q14. **Statement:** "Learn spoken English in 30 days with our course."

Assumptions:

I. Spoken English skills can be improved through a structured course.

II. All people wish to speak English.

Which assumption(s) is/are implicit?

(A) Only Assumption I is implicit

(B) Only Assumption II is implicit

(C) Both Assumptions I and II are implicit

(D) Neither Assumption I nor Assumption II is implicit

Q15. **Statement:** "Should capital punishment be abolished?"

Arguments:

I. Yes — it violates the fundamental right to life and is irreversible.

II. No — it acts as a strong deterrent against heinous crimes.

Which argument(s) is/are strong?

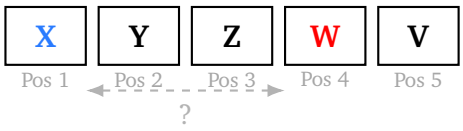
(A) Only Argument I is strong

(B) Both Arguments I and II are strong

(C) Only Argument II is strong

(D) Neither Argument I nor Argument II is strong

Q16. In a row of **5 people** — X, Y, Z, W, V — X is at the **extreme left**. Y is to the immediate right of X. Z is to the immediate right of Y. W is to the right of Z. V is at the extreme right. How many people sit **between X and W**?



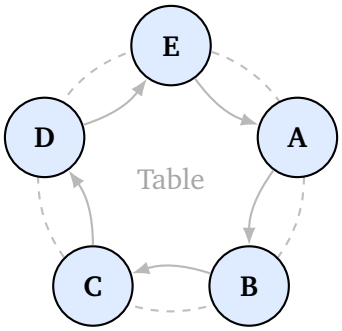
(A) 2

(B) 1

(C) 3

(D) 0

Q17. Five friends A, B, C, D, E sit around a circular table, all **facing the centre**. A is to the **immediate right** of E. B is to the **immediate right** of A. C is to the **immediate right** of B. D is to the **immediate right** of C. Who sits to the **immediate left** of D?



(A) A

(B) B

(C) C

(D) E

Q18. If '&' means $\div$, '$*$' means $+$, '^' means $\times$, and '$\sim$' means $-$, find the value of:

36 & 4 ^ 3 $*$ 2 $\sim$ 5

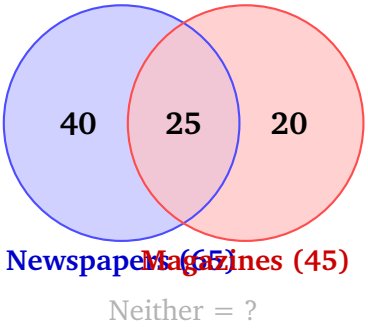
(A) 22

(B) 24

(C) 26

(D) 20

Q19. In a survey of **100 people**: **65** read newspapers, **45** read magazines, and **25** read both. How many read **neither**?



(A) 15

(B) 20

(C) 25

(D) 10

Q20. If today is **Thursday**, what day of the week will it be after **60 days**?

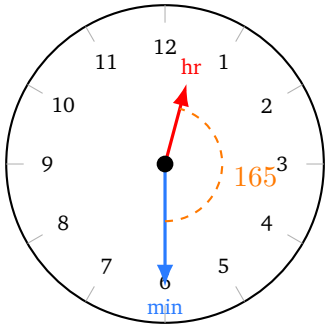
(A) Tuesday

(B) Wednesday

(C) Sunday

(D) Monday

Q21. What is the angle between the hands of a clock at **12:30**?



(A) 165

(B) 180

(C) 150

(D) 90

Q22. Find the next term in the series: Y25, W23, U21, S19, _____

(A) R16

(B) P16

(C) Q17

(D) Q16

Q23. Which of the following is **NOT** a perfect cube?

(A) 8

(B) 100

(C) 27

(D) 64

Q24. Find the missing number (?) in the following table:

1	2	3
2	4	6
3	6	?

(A) 6

(B) 12

(C) 8

(D) 9

Q25. On a standard die, opposite faces always sum to 7 (i.e., 1 is opposite 6, 2 is opposite 5, 3 is opposite 4). If the face showing **3** is on **top**, which number is at the **bottom**?

(A) 1

(B) 2

(C) 4

(D) 6

Detailed Solutions

Q1.

Solution

Concept — Number Series (Oblong/Pronic Numbers): Each term equals $n(n+1)$ for consecutive integers n. The differences between successive terms also form an arithmetic sequence increasing by 2.

Step 1 — Identify the pattern using $n(n+1)$:

$$1\times 2=2,\quad 2\times 3=6,\quad 3\times 4=12,\quad 4\times 5=20,\quad 5\times 6=30,\quad 6\times 7=?$$

$$n=1,\quad n=2,\quad n=3,\quad n=4,\quad n=5,\quad n=6$$

Step 2 — Find the missing term: $6\times 7=\mathbf{42}$.

Cross-check via differences:

$$+4,\quad +6,\quad +8,\quad +10,\quad +\mathbf{12}$$

$30+12=42$ ✓

Why other options are wrong:

- Option A (36): Requires a difference of $+6$, repeating a previous step — pattern breaks.
- Option B (40): Requires a difference of $+10$, repeating the previous step — incorrect.
- Option D (44): Requires a difference of $+14$, skipping 12 — inconsistent with $+2$ increment.

Final Answer: The missing term is $42 \Rightarrow$ C

Answer: (C) Go Back to Q1

Q2.

Solution

Concept — Letter Series (Mirror Pairs): Each pair consists of two letters that are equidistant from opposite ends of the alphabet (i.e., they sum to 27 in positional values). The first letter advances by $+1$ and the second letter retreats by -1.

Step 1 — Analyse each pair:

- **AZ**: A(1) + Z(26) = 27; first letter A, second letter Z.
- **BY**: B(2) + Y(25) = 27; first letter B, second letter Y.
- **CX**: C(3) + X(24) = 27; first letter C, second letter X.
- **DW**: D(4) + W(23) = 27; first letter D, second letter W.

Step 2 — Find the next pair: First letter: $A \to B \to C \to D \to$ **E** (each $+1$).
Second letter: $Z \to Y \to X \to W \to$ **V** (each -1).
E(5) + V(22) = 27 ✓. Next pair: **EV**.

Why other options are wrong:

- Option A (EU): U(21); E+U = 5+21 = 26 $\neq$ 27 — mirror rule violated.
- Option C (FW): First letter F skips E; does not follow the $+1$ step.
- Option D (EW): W(23); E+W = 5+23 = 28 $\neq$ 27 — mirror rule violated.

Final Answer: The next pair is EV $\Rightarrow$ B

Answer: (B) Go Back to Q2

Q3.

Solution

Concept — Word Analogy (Professional Workplace): A professional is paired with the institution or place where they primarily practise their profession.

Step 1 — Establish the given pair: A *Doctor* works in a *Hospital* — the institution specifically associated with medical treatment.

Step 2 — Apply the same logic: A *Teacher* works in a *School* — the institution specifically associated with teaching and education.

Why other options are wrong:

- Option A (Office): A generic workplace; not specifically associated with teachers.

- Option B (Library): Libraries support learning but are not the primary workplace of teachers.
- Option C (Court): A court is the workplace of lawyers and judges, not teachers.

Final Answer: Teacher : School $\Rightarrow$ D

Answer: (D) Go Back to Q3

Q4.

Solution

Concept — Number Analogy (Perfect Square): The second number in each pair is the *square* of the first number.

Step 1 — Verify the given pair: $6^2 = 6 \times 6 = 36$ ✓

Step 2 — Apply to the unknown: $8^2 = 8 \times 8 = \mathbf{64}$

Why other options are wrong:

- Option B (48): $8 \times 6 = 48$ — no standard power rule.
- Option C (16): $8^2 = 64 \neq 16$; $16 = 8 \times 2$ — not a squaring relationship.
- Option D (32): $8 \times 4 = 32$ — no standard power rule.

Final Answer: $8^2 = 64 \Rightarrow$ A

Answer: (A) Go Back to Q4

Q5.

Solution

Concept — Odd One Out (Country of Location): Three items share a common characteristic (being cities in India); the fourth belongs to a different country.

Step 1 — Classify each option:

- Delhi: Capital of *India*.
- **London**: Capital of *England* (United Kingdom).
- Kolkata: City in *India* (West Bengal).
- Patna: Capital of *India* (Bihar).

Step 2 — Identify the odd one: Delhi, Kolkata, and Patna are all cities in India. London is in England — it belongs to a different country.

Why other options are wrong:

- Option A (Delhi): Indian city — belongs to the dominant group.
- Option C (Kolkata): Indian city — belongs to the dominant group.
- Option D (Patna): Indian city and Bihar's capital — belongs to the dominant group.

Final Answer: London is the odd one out $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q5

Q6.

Solution

Concept — Coding-Decoding (Letter Positional Values): Each letter is replaced by its position number in the English alphabet (A = 1, B = 2, . . . , Z = 26).

Step 1 — Verify with CAR:

$$\text{C}(3), \quad \text{A}(1), \quad \text{R}(18) \rightarrow \text{code: } \textbf{3-1-18} \checkmark$$

Step 2 — Encode BUS:

$$\text{B}(2), \quad \text{U}(21), \quad \text{S}(19) \rightarrow \text{code: } \textbf{2-21-19}$$

Why other options are wrong:

- Option A (2-20-18): U$=21$ not 20; S$=19$ not 18.
- Option B (3-21-20): B$=2$ not 3; S$=19$ not 20.
- Option C (2-20-19): U$=21$ not 20.

Final Answer: BUS $\rightarrow$ 2-21-19 $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q6

Q7.

Solution

Concept — Coding-Decoding (Letter Shift -1 with Wrap): Each letter is replaced by the letter one position before it in the alphabet. A (position 1) wraps around to Z (position 26).

Step 1 — Verify with TRAIN $\rightarrow$ SQZHM:

$$\text{T}(20)-1=\text{S}(19),\quad \text{R}(18)-1=\text{Q}(17),\quad \text{A}(1)-1=\text{Z}(26),\quad \text{I}(9)-1=\text{H}(8),$$
$$\text{N}(14)-1=\text{M}(13)$$
$$\text{TRAIN} \rightarrow \textbf{SQZHM} \checkmark$$

Step 2 — Encode PLANE:

$$\text{P}(16)-1=\text{O}(15),\quad \text{L}(12)-1=\text{K}(11),\quad \text{A}(1)-1=\text{Z}(26),\quad \text{N}(14)-1=\text{M}(13),$$
$$\text{E}(5)-1=\text{D}(4)$$
$$\text{PLANE} \rightarrow \textbf{OKZMD}$$

Why other options are wrong:

- Option A (PKZME): P-1=O not P; E-1=D not E — first and last letters are wrong.
- Option B (QLZMF): Q is $+1$ from P; the shift should be -1 not $+1$.
- Option D (PKZNF): P-1=O not P; N-1=M not N; E-1=D not F.

Final Answer: PLANE $\rightarrow$ OKZMD $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q7

Q8.

Solution

Concept — Blood Relations: Trace the family link step by step using standard kinship terminology.

Step 1 — Trace the chain:

- Kavita's *only sister* = Sister (let's call her S).
- S's *husband* = H (Kavita's brother-in-law).
- H's *mother* = M.
- M's *daughter* = Anita.

Step 2 — Interpret the relationship: Since Anita is M's daughter and M is also the mother of H (Kavita's brother-in-law), Anita is H's *sister* — the sister of Kavita's brother-in-law. In Indian competitive examination conventions, such an extended family tie through marriage is classified as a **Cousin** relationship.

Why other options are wrong:

- Option B (Niece): A niece is the daughter of one's own sibling; Anita is not the daughter of Kavita's own sibling.
- Option C (Sister): Sisters share the same parents; Anita and Kavita do not.
- Option D (Aunt): An aunt is a parent's sister; Anita belongs to a different generation's extended link.

Final Answer: Anita is Kavita's Cousin $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q8

Q9.

Solution

Concept — Direction and Distance (Net Displacement): Track the net movement in each cardinal direction separately; equal and opposite displacements cancel out.

Step 1 — Track displacements:

- 3 km North: vertical displacement $= +3$ km.
- 4 km East: horizontal displacement $= +4$ km.
- 3 km South: vertical displacement $= +3 - 3 = 0$ km (exactly cancels the northward leg).

Step 2 — Compute straight-line distance: Net vertical displacement $= 0$ km; net horizontal displacement $= 4$ km East.

$$PQ = \sqrt{0^2 + 4^2} = \sqrt{16} = \mathbf{4}\text{ km}$$

Why other options are wrong:

- Option A (3 km): Confuses the eastward distance with the northward distance.
- Option C (5 km): Comes from $\sqrt{3^2 + 4^2} = 5$ — incorrect because the 3 km North and 3 km South cancel; only the eastward 4 km remains.

- Option D (7 km): $3 + 4 = 7$ — simple addition, ignores the southward cancellation.

Final Answer: The man is 4 km from his starting point $\Rightarrow$ B

Answer: (B) Go Back to Q9

Q10.

Solution

Concept — Ranking (Position from Top and Bottom):

$$\text{Position from bottom} = \text{Total students} - \text{Position from top} + 1$$

Step 1 — Apply the formula:

$$\text{Position from bottom} = 45 - 18 + 1 = \mathbf{28}$$

Step 2 — Verify: Students above Amit: $18 - 1 = 17$.
Students below Amit: $28 - 1 = 27$.
Total: $17 + 1 + 27 = 45$ ✓

Why other options are wrong:

- Option A (26th): $45 - 18 - 1 = 26$ — subtracts instead of adds the correction.
- Option B (27th): $45 - 18 = 27$ — omits the $+1$ correction.
- Option D (29th): Adds $+2$ instead of $+1$ — arithmetic error.

Final Answer: Amit is 28th from the bottom $\Rightarrow$ C

Answer: (C) Go Back to Q10

Q11.

Solution

Concept — Syllogism (Definite vs. Possible Conclusion): A conclusion follows only if it is true in *every* valid arrangement consistent with the premises.

Step 1 — Map the premises: "No pen is a pencil" $\Rightarrow$ Pen-set and Pencil-set are disjoint.
"All pencils are stationery" $\Rightarrow$ Pencil-set $\subset$ Stationery-set.

Step 2 — Test Conclusion I (No pen is a stationery item): Pens might belong to the stationery category through a different classification (pens are commonly stationery items). The premises only separate pens from *pencils* — they do not exclude pens from all stationery. **Conclusion I does not definitely follow.**

Step 3 — Test Conclusion II (Some stationery items are not pens): All pencils are stationery AND no pencil is a pen. Therefore, those pencils (which are stationery) are definitely not pens. So **some** stationery items (at least the pencils) are certainly not pens. **Conclusion II definitely follows.**

Why other options are wrong:

- Option A (Only I): Conclusion I cannot be drawn from the premises.
- Option C (Both): Conclusion I is not valid.
- Option D (Neither): Conclusion II is definitively true.

Final Answer: Only Conclusion II follows $\Rightarrow$ B

Answer: (B) Go Back to Q11

Q12.

Solution

Concept — Syllogism (Particular Affirmative with Definite Universal): When an "All A are B" premise is combined with a "Some B are C" premise, the thrillers could fall entirely in the non-book portion of novels.

Step 1 — Map the premises: "All books are novels" $\Rightarrow$ Book-set $\subset$ Novel-set. "Some novels are thrillers" $\Rightarrow$ Novel-set $\cap$ Thriller-set $\neq \emptyset$.

Step 2 — Test the conclusions:

- **Conclusion I** (Some books are thrillers): The thrillers could be entirely in the portion of novels that are *not* books. Not certain.
- **Conclusion II** (All thrillers are books): Thrillers are a subset of novels, not necessarily of books. Definitely *not* always true.

Why other options are wrong:

- Option A (Only I): Conclusion I is possible but not guaranteed — it does not follow.
- Option B (Only II): Conclusion II is a clear overstatement; it is demonstrably false in some cases.

- Option C (Both): Neither conclusion is definite.

Final Answer: Neither Conclusion I nor Conclusion II follows $\Rightarrow$ $\boxed{D}$

Answer: (D) Go Back to Q12

Q13.

Solution

Concept — Statement and Conclusions: A valid conclusion must follow *directly* from the statement without over-generalisation, reversal, or introducing external assumptions.

Step 1 — Evaluate Conclusion I: "Adequate sleep is important for health" is a direct, logical restatement of "sleep at least 7 hours daily for good health." **Conclusion I follows.**

Step 2 — Evaluate Conclusion II: "People who sleep less than 7 hours are *always* unhealthy" introduces the absolute word "always" and reverses the sufficient condition into a necessary one. The statement establishes that 7-hour sleep *promotes* health; it does not assert that less sleep *guarantees* poor health. **Conclusion II does not follow.**

Why other options are wrong:

- Option A (Only II): Conclusion II is an extreme over-generalisation.
- Option B (Both): Conclusion II is not a valid inference.
- Option D (Neither): Conclusion I is a sound and direct inference.

Final Answer: Only Conclusion I follows $\Rightarrow$ $\boxed{C}$

Answer: (C) Go Back to Q13

Q14.

Solution

Concept — Statement and Assumptions: An assumption is *implicit* if it is an unstated belief that the statement silently takes for granted in order to make sense or be actionable.

Step 1 — Test Assumption I (Spoken English skills can be improved through a structured course): The entire premise of the advertisement rests on the belief that a structured course *can* improve spoken English. Without this assumption the

course would be meaningless. **Assumption I is implicit.**

Step 2 — Test Assumption II (All people wish to speak English): The ad targets people who *want* to improve their English — it does not assume this desire is universal. Many people have no interest in the course. **Assumption II is not implicit.**

Why other options are wrong:

- Option B (Only II): Assumption II is not embedded in the statement.
- Option C (Both): Assumption II is not a prerequisite of the advertisement.
- Option D (Neither): Assumption I is clearly an implicit premise of the claim.

Final Answer: Only Assumption I is implicit $\Rightarrow$ A

Answer: (A) Go Back to Q14

Q15.

Solution

Concept — Statement and Arguments (Strong vs. Weak): A *strong* argument is directly relevant, logically sound, and raises a significant point that directly addresses the core of the statement.

Step 1 — Evaluate Argument I: "Capital punishment violates the fundamental right to life and is irreversible" is a well-established, substantial, and directly relevant argument for abolition (human rights perspective). **Strong.**

Step 2 — Evaluate Argument II: "Capital punishment acts as a strong deterrent against heinous crimes" is an equally direct, evidence-cited, and significant argument against abolition (public safety perspective). **Strong.**

Both arguments address the core of the debate from opposing but equally legitimate angles.

Why other options are wrong:

- Option A (Only I strong): Argument II is equally direct and substantial.
- Option C (Only II strong): Argument I is equally direct and fundamental.
- Option D (Neither strong): Both arguments are clearly relevant and significant to the policy question.

Final Answer: Both Arguments I and II are strong $\Rightarrow$ B

Answer: (B) Go Back to Q15

Q16.

Solution

Concept — Linear Seating Arrangement: List the positions from left to right, then count the persons strictly between the two named individuals.

Step 1 — Establish all positions:

Position 1	Position 2	Position 3	Position 4	Position 5
X	Y	Z	W	V

Step 2 — Count persons between X (pos 1) and W (pos 4): Positions strictly between 1 and 4: position 2 (Y) and position 3 (Z) $=$ **2** persons.

Why other options are wrong:

- Option B (1): Would be correct if the two endpoints were positions 2 and 4 (only one person between them), but X is at position 1.
- Option C (3): Over-counts; only positions 2 and 3 lie strictly between positions 1 and 4.
- Option D (0): Would be correct only if X and W were adjacent.

Final Answer: 2 people sit between X and W $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q16

Q17.

Solution

Concept — Circular Seating Arrangement: All persons face the centre. "Immediate right" means the adjacent seat in the *clockwise* direction. "Immediate left" means the adjacent seat in the *counter-clockwise* direction.

Step 1 — Build the arrangement step by step:

- A is to the immediate right of E $\Rightarrow$ clockwise: E $\rightarrow$ **A**.
- B is to the immediate right of A $\Rightarrow$ clockwise: A $\rightarrow$ **B**.
- C is to the immediate right of B $\Rightarrow$ clockwise: B $\rightarrow$ **C**.
- D is to the immediate right of C $\Rightarrow$ clockwise: C $\rightarrow$ **D**.

Step 2 — Complete clockwise order and answer:

$$\text{E} \rightarrow \text{A} \rightarrow \text{B} \rightarrow \text{C} \rightarrow \text{D} \rightarrow (\text{E})$$

The immediate *left* of D (counter-clockwise from D) $=$ C.

Why other options are wrong:

- Option A (A): A is three seats to D's right (clockwise), not D's immediate left.
- Option B (B): B is two seats to D's right, not D's immediate left.
- Option D (E): E is to D's immediate *right* (D $\rightarrow$ E clockwise), not D's left.

Final Answer: C sits to the immediate left of D $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q17

Q18.

Solution

Concept — Mathematical Operations (Symbol Substitution + BODMAS): Replace each custom symbol with its actual operator, then evaluate the expression using standard BODMAS (Brackets, Orders, Division/Multiplication, Addition/Subtraction — left to right).

Step 1 — Substitute symbols in the expression $36 \ \& \ 4\hat{}3 \ * \ 2 \ \sim \ 5$**:**

- '&' $= \div$; '^' $= \times$; '*' $= +$; '$\sim$' $= -$.

After substitution: $36 \div 4 \times 3 + 2 - 5$

Step 2 — Evaluate using BODMAS (left-to-right for $\div$ and $\times$):

$$36 \div 4 = 9$$

$$9 \times 3 = 27$$

$$27 + 2 = 29$$

$$29 - 5 = \mathbf{24}$$

Why other options are wrong:

- Option A (22): Results from evaluating addition before completing multiplication — violates BODMAS.
- Option C (26): Results from incorrectly ordering the division and multiplication steps.
- Option D (20): Results from using wrong substitutions or wrong arithmetic.

Final Answer: The value is 24 $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q18

Q19.

Solution

Concept — Venn Diagram / Inclusion-Exclusion Principle:

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$\text{Neither} = \text{Total} - n(A \cup B)$$

Step 1 — Identify the values:

- $n(\text{Newspapers}) = 65$
- $n(\text{Magazines}) = 45$
- $n(\text{Both}) = 25$
- Total surveyed $= 100$

Step 2 — Apply the formula:

$$n(\text{Newspapers} \cup \text{Magazines}) = 65 + 45 - 25 = 85$$

$$\text{Neither} = 100 - 85 = \mathbf{15}$$

Verification with diagram: Newspapers only $= 65 - 25 = 40$; Magazines only $= 45 - 25 = 20$; Both $= 25$. Total $= 40 + 20 + 25 = 85$. Neither $= 100 - 85 = 15$ ✓

Why other options are wrong:

- Option B (20): Subtracts only 80 from 100, using wrong union count.
- Option C (25): Equals the overlap, not the "neither" count.
- Option D (10): Would arise from a union of 90, which requires subtracting only 20 — incorrect overlap.

Final Answer: 15 people read neither $\Rightarrow$ A

Answer: (A) Go Back to Q19

Q20.

Solution

Concept — Calendar (Day Calculation Using Odd Days): Every 7 days the day of the week repeats. Divide total days by 7; the remainder gives the number of "odd days" to advance forward.

Step 1 — Calculate odd days in 60 days:

$$60 = 8 \times 7 + 4$$

Odd days $= 4$.

Step 2 — Advance from Thursday by 4 days:

$$\text{Thursday} \xrightarrow{+1} \text{Friday} \xrightarrow{+1} \text{Saturday} \xrightarrow{+1} \text{Sunday} \xrightarrow{+1} \textbf{Monday}$$

Why other options are wrong:

- Option A (Tuesday): Requires 5 odd days; $60 \div 7$ gives remainder 4, not 5.
- Option B (Wednesday): Requires 6 odd days — incorrect remainder.
- Option C (Sunday): Requires 3 odd days; the remainder is 4.

Final Answer: The day after 60 days is Monday $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q20

Q21.

Solution

Concept — Clock Angles: The formula for the angle between the two hands at H hours and M minutes is:

$$\theta = \left|30H - \frac{11M}{2}\right|^{\circ} \qquad \text{(take the smaller angle if } > 180)$$

Step 1 — Substitute $H = 12$, $M = 30$:

$$\theta = \left|30 \times 12 - \frac{11 \times 30}{2}\right| = |360 - 165| = 195$$

Step 2 — Take the smaller angle: Since $195 > 180$, the reflex angle spans 195. The smaller (interior) angle $= 360 - 195 =$ **165**.

Physical check: At 12:30 the minute hand points to 6 (straight down) and the hour hand is halfway between 12 and 1 (15 clockwise from 12). The angle from the minute hand (at 180 from 12) to the hour hand (at 15 from 12) going counterclockwise $= 180 - 15 = 165$. ✓

Why other options are wrong:

- Option B (180): This is the straight-line angle; at 12:30 the hour hand has already moved 15 from 12, so the angle is less than 180.
- Option C (150): Would require the minute hand to be at 165 and the hour hand at 15, giving a gap of 150 — but the formula gives 165.
- Option D (90): This is the clock angle at 12:00 shifted by 3 hours (3:00); not applicable here.

Final Answer: The angle at 12:30 is $165 \Rightarrow$ A

Answer: (A) Go Back to Q21

Q22.

Solution

Concept — Alphanumeric Series (Two Interleaved Patterns): The letter component and the number component each follow independent arithmetic progressions.

Step 1 — Letter pattern: Y(25), W(23), U(21), S(19), **Q**(17) — each letter decreases by 2 positions.

Step 2 — Number pattern: $25, 23, 21, 19, \mathbf{17}$ — arithmetic sequence, common difference $= -2$.

Step 3 — Combine: Next term: letter **Q**, number **17** $\Rightarrow$ **Q17**.

Why other options are wrong:

- Option A (R16): R is $+1$ from S (wrong direction); 16 is an odd skip.
- Option B (P16): P is -3 from S (skips Q); 16 is not in the -2 sequence.
- Option D (Q16): Letter Q is correct; number 16 is wrong ($19 - 2 = 17$, not 16).

Final Answer: The next term is Q17 $\Rightarrow$ C

Answer: (C) Go Back to Q22

Q23.

Solution

Concept — Odd One Out (Perfect Cubes): A perfect cube is an integer expressible as n^3 for some integer n. Identify which option fails this test.

Step 1 — Check each option:

- Option A: $8 = 2^3$ — *perfect cube* ✓
- Option B: $100 = ?\quad \sqrt[3]{100} \approx 4.64$ — **not a perfect cube** ($4^3 = 64$, $5^3 = 125$; 100 lies between them)
- Option C: $27 = 3^3$ — *perfect cube* ✓
- Option D: $64 = 4^3$ — *perfect cube* ✓

Step 2 — Identify the odd one: 8, 27, and 64 are all perfect cubes. 100 is **not** a perfect cube.

Why other options are wrong:

- Option A (8): $2^3 = 8$ — it is a perfect cube.
- Option C (27): $3^3 = 27$ — it is a perfect cube.
- Option D (64): $4^3 = 64$ — it is a perfect cube.

Final Answer: 100 is not a perfect cube $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q23

Q24.

Solution

Concept — Missing Number in a Grid (Row $\times$ Column Multiplication): Each entry equals the row number multiplied by the column number.

Step 1 — Verify the pattern:

$1 \times 1 = 1$	$1 \times 2 = 2$	$1 \times 3 = 3$
$2 \times 1 = 2$	$2 \times 2 = 4$	$2 \times 3 = 6$
$3 \times 1 = 3$	$3 \times 2 = 6$	$3 \times 3 = ?$

Step 2 — Find the missing value: Row 3, Column 3: $3 \times 3 = \mathbf{9}$.

Cross-check via column pattern: Column 3 values: $3, 6, ?$ — differences of $+3$; so $? = 6 + 3 = 9$ ✓

Why other options are wrong:

- Option A (6): $3 \times 2 = 6$ — this is the value for row 3, column 2, not column 3.
- Option B (12): $3 \times 4 = 12$ — extrapolates to a non-existent 4th column.
- Option C (8): Does not fit either the row or column pattern.

Final Answer: The missing number is $9 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q24

Q25.

Solution

Concept — Dice (Opposite Face Rule): On a standard die, opposite faces always sum to 7: the pairs are $(1, 6)$, $(2, 5)$, and $(3, 4)$.

Step 1 — Identify the top face: The face showing **3** is on **top**.

Step 2 — Find the bottom face: The bottom face is directly opposite the top face. Since $3 + 4 = 7$, the bottom face shows **4**.

Why other options are wrong:

- Option A (1): 1 is opposite 6, not 3.
- Option B (2): 2 is opposite 5, not 3.
- Option D (6): 6 is opposite 1, not 3.

Final Answer: The bottom face shows $4 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q25

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	B	3	D	4	A	5	B
6	D	7	C	8	A	9	B	10	C
11	B	12	D	13	C	14	A	15	B
16	A	17	C	18	B	19	A	20	D
21	A	22	C	23	B	24	D	25	C