

Bihar B.Ed CET Logical & Analytical Reasoning

Sample Paper – 4

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.

QUESTIONS (Q 1 – Q 25)

Q1. What comes next in the series?

1, 3, 7, 15, 31, _____

- (A) 47
- (B) 55
- (C) 57
- (D) 63

Q2. What comes next in the series?

B, G, L, Q, _____

- (A) U
- (B) V
- (C) W



(D) X

Q3. 29 : 11 :: 38 : ?

(A) 38

(B) 3

(C) 11

(D) 8

Q4. Sun : Light :: Fire : ?

(A) Heat

(B) Burn

(C) Wood

(D) Ash

Q5. Find the odd one out from the following:

AZ BY CX EW

(A) AZ

(B) BY

(C) CX

(D) EW

Q6. In a certain code, each letter is replaced by the next letter in the alphabet (A→B, B→C, ..., Z→A). The word "RAIN" is coded as "SBJO". Using the same code, what is the code for "SNOW"?

(A) ROPX

(B) TOPX

(C) TNPX

(D) TOPW

Q7. If A= 1, B= 2, C= 3, ..., Z= 26, what is the numerical value of the word MIND?

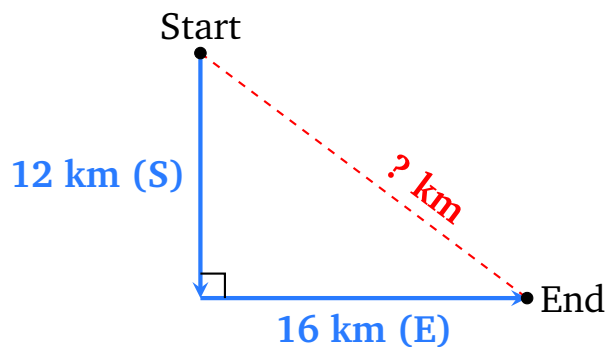


- (A) 40
- (B) 38
- (C) 42
- (D) 36

Q8. X is the **brother** of Y. Y is the **daughter** of Z. Z is the **wife** of W. How is W related to X?

- (A) Uncle
- (B) Brother
- (C) Father
- (D) Grandfather

Q9. A man starts from a point and walks **12 km towards South**, then turns and walks **16 km towards East**. What is the straight-line distance from his starting point?



- (A) 18 km
- (B) 20 km
- (C) 22 km
- (D) 28 km

Q10. In a class, Meena's rank from the **top** is **12** and her rank from the **bottom** is **19**. How many students are there in the class?

- (A) 28
- (B) 29



(C) 31

(D) 30

Q11. Statements:

- All teachers are educated.
- All educated persons are responsible.

Conclusions:

- I. All teachers are responsible.
- II. All responsible persons are teachers.

- (A) Only Conclusion I follows
(B) Only Conclusion II follows
(C) Both Conclusions follow
(D) Neither Conclusion follows

Q12. Statements:

- No scientist is uneducated.
- No uneducated person can get a job.

Conclusions:

- I. All scientists can get a job.
- II. Some scientists cannot get a job.

- (A) Only Conclusion I follows
(B) Only Conclusion II follows
(C) Neither Conclusion follows
(D) Both Conclusions follow

Q13. Statement: “Companies that invest in employee training see higher productivity.”

Conclusions:

- I. Training always increases productivity.
- II. Employee training is one factor that can boost company productivity.



- (A) Only Conclusion I follows
- (B) Only Conclusion II follows
- (C) Both Conclusions follow
- (D) Neither Conclusion follows

Q14. Statement: “Should the voting age be lowered to 16?”

Argument I (For): Yes, young people are politically aware and deserve a voice.

Argument II (Against): No, teenagers are too immature to make informed political decisions.

- (A) Only Argument I is strong
- (B) Only Argument II is strong
- (C) Neither Argument is strong
- (D) Both Arguments are strong

Q15. Statement: “Students who study regularly score well in exams.”

Assumptions:

- I. Regular study improves exam performance.
- II. Students who do not study regularly never score well.

- (A) Only Assumption I is implicit
- (B) Only Assumption II is implicit
- (C) Both Assumptions are implicit
- (D) Neither Assumption is implicit

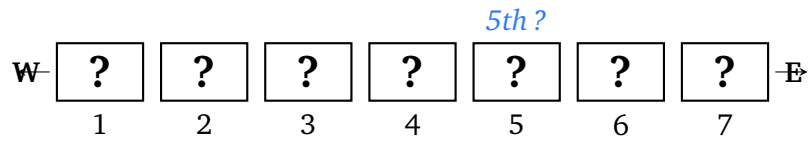
Q16. Seven people P, Q, R, S, T, U and V stand in a row facing East. The following conditions apply:

- Q is 3rd from the left.
- P is immediately to the left of Q.
- R is immediately to the right of Q.
- V is at the rightmost end.
- S is positioned between T and U.



- T is not adjacent to R.
- U is to the right of S.

Who is 5th from the left?



- (A) T
- (B) U
- (C) S
- (D) R

Q17. Five persons A, B, C, D and E are ranked 1 to 5 (Rank 1 = Best, Rank 5 = Worst).

- A is ranked better than B.
- C is ranked 3rd.
- D is ranked worse than E.
- B is ranked 4th.

Who is ranked 5th (worst)?

- (A) A
- (B) D
- (C) E
- (D) B

Q18. The following symbols represent specific values. Find the value of $\blacklozenge \times \star + \bullet \times \star$.

Symbol	Value
$\star$	2
$\blacklozenge$	5
$\bullet$	3

- (A) 10



- (B) 13
- (C) 20
- (D) 16

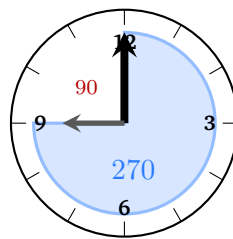
Q19. In a survey of **200 people**: 40% like *only* Maths, 35% like *only* Science, and 25% like *both*. How many people like **at least one** of the two subjects?

- (A) 200
- (B) 150
- (C) 175
- (D) 100

Q20. Which of the following years is **NOT** a leap year?

- (A) 2000
- (B) 1996
- (C) 1900
- (D) 2024

Q21. At **9:00**, what is the **reflex angle** between the hour hand and the minute hand?



- (A) 90
- (B) 270
- (C) 180
- (D) 360

Q22. Which is the **odd one out**?

A1Z

B2Y

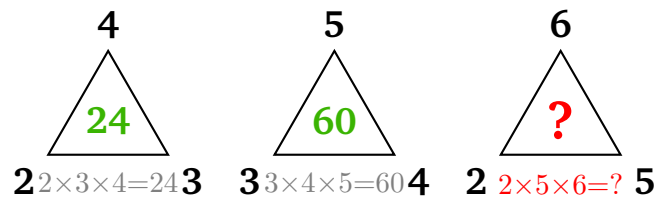
C3X

E6V



- (A) A1Z
- (B) B2Y
- (C) C3X
- (D) E6V

Q23. In each triangle, the centre value is obtained from the three vertex values. Find the missing value.



- (A) 60
- (B) 30
- (C) 13
- (D) 26

Q24. A cube of side 4 cm is painted blue on all faces and then cut into 1 cm^3 small cubes. How many small cubes have **no face painted**?

- (A) 0
- (B) 4
- (C) 8
- (D) 16

Q25. A woman introduces a man as “the son of the brother of my mother.” How is the man related to the woman?

- (A) Uncle
- (B) Cousin
- (C) Nephew
- (D) Brother

ANSWER KEY



Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
---	-----	---	-----	---	-----	---	-----	---	-----



DETAILED SOLUTIONS

Q 1.

Answer: (D)

Solution

Concept: Number Series – each term is obtained by doubling the previous term and adding 1.

Step 1: Identify the rule $T_{n+1} = 2 \times T_n + 1$:

$$1 \xrightarrow{\times 2 + 1} 3 \xrightarrow{\times 2 + 1} 7 \xrightarrow{\times 2 + 1} 15 \xrightarrow{\times 2 + 1} 31.$$

Step 2: Apply to the last term: $2 \times 31 + 1 = 63$.

Why other options are wrong:

- (A) 47: $31 + 16$ – arbitrary increment, not consistent with the rule.
- (B) 55: Incorrect – perhaps confused with $31 + 24$.
- (C) 57: Off by 6 from the correct answer.

Final Answer: (D) 63 [[Go Back to Q 1](#)]

Q 2.

Answer: (B)

Solution

Concept: Letter Series – each letter advances by **5 positions** in the alphabet.

Step 1: Assign letter positions: B(2), G(7), L(12), Q(17). Difference = +5 at each step.

Step 2: Next term: $17 + 5 = 22$, which is the letter V.

Why other options are wrong:

- (A) U (21st): only +4 from Q.
- (C) W (23rd): overshoots by 1 (+6 from Q).
- (D) X (24th): adds 7 instead of 5.

Final Answer: (B) V [[Go Back to Q 2](#)]



Q 3.

Answer: (C)

Solution**Concept:** Number Analogy – the second number is the **digit sum** of the first.**Step 1:** Verify the given pair: $29 \rightarrow 2 + 9 = 11$. So $29 : 11$ uses the digit-sum rule.**Step 2:** Apply to 38: $3 + 8 = 11$.**Why other options are wrong:**

- (A) 38: Simply repeats the first number – no transformation.
- (B) 3: Only the tens digit of 38.
- (D) 8: Only the units digit of 38.

Final Answer: (C) 11 [\[Go Back to Q 3\]](#)

Q 4.

Answer: (A)

Solution**Concept:** Word Analogy – Source : Primary Energy Output.**Step 1:** Sun produces Light as its primary radiant output.**Step 2:** Fire produces **Heat** as its primary thermal output. Both analogies follow the pattern Source $\rightarrow$ Direct Energy Output.**Why other options are wrong:**

- (B) Burn: An action fire performs on objects, not an output of fire itself.
- (C) Wood: A fuel input to fire, not a product of fire.
- (D) Ash: A combustion residue (by-product), not the primary energy output.

Final Answer: (A) Heat [\[Go Back to Q 4\]](#)

Q 5.

Answer: (D)

Solution**Concept:** Odd One Out – two-pattern test: (i) letter-position sum, (ii) sequential first letters.**Step 1 – Sum test** ($A=1, \dots, Z=26$):

$$AZ : 1+26 = 27, \quad BY : 2+25 = 27, \quad CX : 3+24 = 27, \quad EW : 5+23 = 28 \neq 27.$$



Step 2 – Sequence test: First letters are A, B, C – the next should be D, but the list skips to E. EW violates both patterns.

Final Answer: (D) EW [\[Go Back to Q 5\]](#)

Q 6.

Answer: (B)

Solution

Concept: Coding-Decoding – each letter is shifted **one position forward** in the alphabet.

Step 1: Verify: $R \rightarrow S$, $A \rightarrow B$, $I \rightarrow J$, $N \rightarrow O$ gives SBJO ✓.

Step 2: Encode SNOW:

$$S \rightarrow T, \quad N \rightarrow O, \quad O \rightarrow P, \quad W \rightarrow X \implies \text{TOPX.}$$

Why other options are wrong:

- (A) ROPX: S is wrongly kept as R (no shift applied).
- (C) TNPX: N is not shifted (kept as N).
- (D) TOPW: W is not shifted (kept as W instead of X).

Final Answer: (B) TOPX [\[Go Back to Q 6\]](#)

Q 7.

Answer: (A)

Solution

Concept: Coding-Decoding – assign $A=1, B=2, \dots, Z=26$ and sum the letter values.

Step 1: Assign values: $M=13, I=9, N=14, D=4$.

Step 2: $\text{Sum} = 13 + 9 + 14 + 4 = 40$.

Why other options are wrong:

- (B) 38: Incorrect – uses a wrong value for one letter (e.g., N as 12).
- (C) 42: Overcount by 2 – likely uses $D=6$ instead of 4.
- (D) 36: Uses several wrong letter values.

Final Answer: (A) 40 [\[Go Back to Q 7\]](#)



Q 8.

Answer: (C)

Solution**Concept:** Blood Relations – multi-step chain.**Step 1:** Y is the daughter of Z $\Rightarrow$ Z is Y's *mother*. Z is the wife of W $\Rightarrow$ W is Y's *father*.**Step 2:** X is the brother of Y $\Rightarrow$ W (Y's father) is also **X's father**.**Why other options are wrong:**

- (A) Uncle: Uncle is a sibling of a parent, not the direct parent.
- (B) Brother: W is the parent generation, not a peer of X.
- (D) Grandfather: Would require W to be the father of one of X's parents.

Final Answer: (C) Father [\[Go Back to Q 8\]](#)

Q 9.

Answer: (B)

Solution**Concept:** Direction & Distance – Pythagoras theorem for a right-angled path.**Step 1:** The man's path forms a right angle: legs of 12 km (South) and 16 km (East).**Step 2:**

$$d = \sqrt{12^2 + 16^2} = \sqrt{144 + 256} = \sqrt{400} = 20 \text{ km.}$$

Shortcut: (12, 16, 20) = $4 \times (3, 4, 5)$ – a well-known Pythagorean triple.**Why other options are wrong:**

- (A) 18 km: $\sqrt{324}$ – not the hypotenuse here.
- (C) 22 km: Overestimate with no valid derivation.
- (D) 28 km: $12 + 16 = 28$ is the total path length, not the straight-line distance.

Final Answer: (B) 20 km [\[Go Back to Q 9\]](#)

Q 10.

Answer: (D)

Solution**Concept:** Ranking – total count formula.**Formula:** Total = Rank from top + Rank from bottom – 1.**Step 1:** Total = $12 + 19 - 1 = 30$.**Reason for subtracting 1:** Meena herself is counted once in “top 12” and once in

“bottom 19”; subtracting 1 avoids the double-count.

Why other options are wrong:

- (A) 28: Uses incorrect ranks.
- (B) 29: Subtracts 2 instead of 1.
- (C) 31: $12 + 19$ without the required subtraction.

Final Answer: (D) 30 [\[Go Back to Q 10\]](#)

Q 11.

Answer: (A)

Solution

Concept: Syllogism – Universal Affirmative (All–All); transitive inference.

Step 1: Teachers $\subseteq$ Educated (Premise 1). Educated $\subseteq$ Responsible (Premise 2). By transitivity: Teachers $\subseteq$ Responsible. **Conclusion I follows.**

Step 2: Conclusion II claims Responsible $\subseteq$ Teachers. This is the converse and does not necessarily hold – many responsible people are not teachers. **Conclusion II does NOT follow.**

Final Answer: (A) Only Conclusion I follows [\[Go Back to Q 11\]](#)

Q 12.

Answer: (C)

Solution

Concept: Syllogism – Universal Negative premises; limited inference.

Step 1: Premise 1 tells us all scientists are educated. Premise 2 says *uneducated* people cannot get jobs. The premises say nothing about whether educated people *can* get jobs.

Step 2:

- Conclusion I (scientists can get jobs): Unsupported – no positive link between being educated and getting a job is established.
- Conclusion II (some scientists cannot get jobs): Also unsupported – no basis for this claim.

Neither conclusion can be validly drawn.

Final Answer: (C) Neither Conclusion follows [\[Go Back to Q 12\]](#)



Q 13.

Answer: (B)

Solution**Concept:** Statement & Conclusions – cautious vs. absolute inferences.**Step 1:** Conclusion I says training *always* increases productivity – a universal absolute. The statement says companies that invest in training “see higher productivity” (a general observed trend, not a universal law). **Conclusion I is too strong and does not follow.****Step 2:** Conclusion II says training is “one factor” that can boost productivity – a modest, qualified claim directly consistent with the statement. **Conclusion II follows.****Final Answer: (B) Only Conclusion II follows** [\[Go Back to Q 13\]](#)

Q 14.

Answer: (D)

Solution**Concept:** Statement & Arguments – evaluating relevance and substance of each argument.**Step 1: Argument I (For):** Highlights youth political awareness and the democratic right to participate. This is a substantive, directly relevant argument. **Strong.****Step 2: Argument II (Against):** Raises the concern of maturity and capacity for informed decision-making – also a substantive, directly relevant counterpoint. **Strong.**

Both arguments address the core issue from opposing but equally valid perspectives.

Final Answer: (D) Both Arguments are strong [\[Go Back to Q 14\]](#)

Q 15.

Answer: (A)

Solution**Concept:** Statement & Assumptions – identifying what the statement presupposes.**Step 1: Assumption I** (regular study improves performance): This is the very basis of the statement – the statement makes sense only if we assume this. **Implicit.****Step 2: Assumption II** (non-regular studiers *never* score well): The statement says regular studiers score well, but does NOT say non-regular studiers never do. The word “never” is extreme and goes beyond what the statement implies. **Not implicit.****Final Answer: (A) Only Assumption I is implicit** [\[Go Back to Q 15\]](#)

Q 16.

Answer: (C)

Solution**Concept:** Linear Seating Arrangement – constraint-based deduction.**Step 1 – Anchor fixed positions:** P is immediately left of Q(3) $\Rightarrow$ P=2. R is immediately right of Q $\Rightarrow$ R=4. V is rightmost $\Rightarrow$ V=7.**Step 2 – Fill remaining positions {1, 5, 6} with T, S, U:**

- T not adjacent to R(4) $\Rightarrow$ T $\neq$ 5. So T=1.
- U is to the right of S, and S is between T and U: T(1)...S...U. With T=1, S and U fill 5,6 in order: S=5, U=6.

Step 3 – Final arrangement: T(1), P(2), Q(3), R(4), S(5), U(6), V(7).**Final Answer:** (C) S [\[Go Back to Q 16\]](#)

Q 17.

Answer: (B)

Solution**Concept:** Ranking Puzzle – logical elimination (Rank 1 = Best, Rank 5 = Worst).**Step 1:** Known: C=3, B=4. A is better than B(4) $\Rightarrow$ A $\in$ {1, 2}.**Step 2:** Remaining ranks {1, 2, 5} for A, D, E. D is worse than E $\Rightarrow$ D has a numerically higher rank than E. Among {1, 2, 5}, the only way D > E is if D=5 (with E taking 1 or 2, and A taking the other of 1 or 2).**Step 3:** In both sub-cases (A=1, E=2 or A=2, E=1), D=5 (worst).**Final Answer:** (B) D [\[Go Back to Q 17\]](#)

Q 18.

Answer: (D)

Solution**Concept:** Symbol Substitution – substitute values and apply BODMAS (multiplication before addition).**Step 1:** From the table: ★ = 2, ♦ = 5, ● = 3.**Step 2:**

$$\diamond \times \star + \bullet \times \star = 5 \times 2 + 3 \times 2 = 10 + 6 = 16.$$

Why other options are wrong:

- (A) 10: Only computes the first product 5×2 , ignoring the second term.
- (B) 13: Arithmetic error in substitution or operation.
- (C) 20: Incorrect grouping, e.g., treating $(\diamond + \bullet) \times \star \times 2$.

Final Answer: (D) 16 [\[Go Back to Q 18\]](#)

Q 19.

Answer: (A)

Solution

Concept: Venn Diagram – “at least one” = union of both sets.

Step 1: The given percentages are:

- Only Maths: 40%
- Only Science: 35%
- Both: 25%

Step 2: Total who like at least one = $40 + 35 + 25 = 100\%$. No one falls outside both circles (0% like neither).

Step 3: 100% of 200 = 200 people.

Final Answer: (A) 200 [\[Go Back to Q 19\]](#)

Q 20.

Answer: (C)

Solution

Concept: Calendar – Leap Year rules.

Rule: A year is a leap year if (i) divisible by 4, *unless* it is a century year (divisible by 100) that is *not* divisible by 400.

Check each option:

- (A) 2000: $2000 \div 400 = 5$ (integer) $\Rightarrow$ Leap year.
- (B) 1996: $1996 \div 4 = 499$ (integer), not a century $\Rightarrow$ Leap year.
- (C) 1900: $1900 \div 100 = 19$ (century year); $1900 \div 400 = 4.75$ (not integer) $\Rightarrow$ **NOT a leap year.**
- (D) 2024: $2024 \div 4 = 506$ (integer), not a century $\Rightarrow$ Leap year.

Final Answer: (C) 1900 [\[Go Back to Q 20\]](#)



Q 21.

Answer: (B)

Solution**Concept:** Clock – angle between hands; reflex angle definition.**Step 1:** At 9:00, the hour hand is at 9 and the minute hand is at 12. Each hour mark spans 30, so the hour hand is $9 \times 30 = 270$ clockwise from 12. The *minor* (shorter) angle between the hands, measured going counterclockwise from minute to hour, is $360 - 270 = 90$.**Step 2:** The *reflex angle* is the larger of the two angles:

$$\text{Reflex angle} = 360 - 90 = 270.$$

Why other options are wrong:

- (A) 90: This is the minor (acute) angle, not the reflex angle.
- (C) 180: Applicable when hands are opposite (e.g., at 6:00).
- (D) 360: A full revolution; not a meaningful angle between two distinct positions.

Final Answer: (B) 270° [[Go Back to Q 21](#)]

Q 22.

Answer: (D)

Solution**Concept:** Odd One Out – two-pattern test on three-character groups.**Step 1 – Middle digit rule:** The middle digit should equal the positional number of the first letter (A=1, B=2, C=3, ...): A1Z ✓, B2Y ✓, C3X ✓, E should give 5, but the group shows 6. E6V violates this rule.**Step 2 – Sum check:** $A+Z=27$, $B+Y=27$, $C+X=27$, $E+V=5+22=27$ ✓. The letter-sum is fine for all, but the middle digit is wrong only for E6V.**Final Answer:** (D) E6V [[Go Back to Q 22](#)]

Q 23.

Answer: (A)

Solution

Concept: Missing Number – the centre value equals the **product of the three vertex values**.

Step 1: Verify Triangle 1: $2 \times 3 \times 4 = 24$ ✓.

Step 2: Verify Triangle 2: $3 \times 4 \times 5 = 60$ ✓.

Step 3: Triangle 3: $2 \times 5 \times 6 = 60$.

Why other options are wrong:

- (B) 30: $2 \times 5 \times 3 = 30$ – uses wrong vertex value (3 instead of 6).
- (C) 13: $2 + 5 + 6 = 13$ – uses sum instead of product.
- (D) 26: No consistent derivation from the vertices.

Final Answer: (A) 60 [\[Go Back to Q 23\]](#)

Q 24.

Answer: (C)

Solution

Concept: Cube Painting – counting unpainted interior small cubes.

Step 1: When a cube of side n is cut into unit cubes and all faces are painted, the cubes with *no* painted face are those entirely in the interior – one layer removed from each side. Their count is $(n - 2)^3$.

Step 2: Here $n = 4$:

$$(4 - 2)^3 = 2^3 = 8.$$

Why other options are wrong:

- (A) 0: Incorrect – interior cubes exist for any $n \geq 3$.
- (B) 4: Corresponds to $(3 - 2)^3 \times 4$ – not the correct formula application.
- (D) 16: Uses exponent 4 instead of 3, i.e., $2^4 = 16$.

Final Answer: (C) 8 [\[Go Back to Q 24\]](#)



Q 25.

Answer: (B)

Solution**Concept:** Blood Relations – tracing through the maternal side.**Step 1:** “Brother of my mother” = woman’s **maternal uncle**.**Step 2:** “Son of my maternal uncle” = woman’s **cousin** (specifically, maternal cousin).**Why other options are wrong:**

- (A) Uncle: The man is the *son* of the uncle, not the uncle himself.
- (C) Nephew: A nephew is the son of the woman’s own sibling – a different relationship.
- (D) Brother: A brother shares the same parents as the woman; the man does not.

Final Answer: (B) Cousin [\[Go Back to Q 25\]](#)