

Bihar B.Ed CET

Logical & Analytical Reasoning

Sample Paper – 7

Duration: 2 Hours

Maximum Marks: 50

Instructions

1. This paper contains **25 questions**. All questions are compulsory.
2. Each question carries **2 marks**. There is **no negative marking**.
3. Read each question carefully before answering.
4. Choose the most appropriate option from (A), (B), (C), and (D).
5. Answers and detailed solutions are provided at the end of this paper.

Questions

Q1. Find the missing term:

3, 6, 11, 18, 27, _____

- (A) 36
- (B) 37
- (C) 39
- (D) 38

Q2. Find the next group:

ACE, GIK, MOQ, _____

- (A) STU
- (B) TVX
- (C) SUW
- (D) SWY



Q3. Cobbler : Shoes :: Carpenter : _____

- (A) Furniture
- (B) Cloth
- (C) Metal
- (D) Brick

Q4. 4 : 16 :: 9 : _____

- (A) 27
- (B) 81
- (C) 36
- (D) 72

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

- (A) Mercury
- (B) Venus
- (C) Moon
- (D) Earth

Q6. In a certain code language, PHONE is written as SKRQH (each letter shifted by +3). Using the same code, how will WATCH be written?

- (A) ZDWFK
- (B) ZBWEK
- (C) YCWEJ
- (D) ZDVEJ

Q7. In a code language, KING is coded by writing the positional value of each letter: K=11, I=9, N=14, G=7, giving 11-9-14-7. How is LION coded?

- (A) 12-9-14-13
- (B) 12-9-15-14

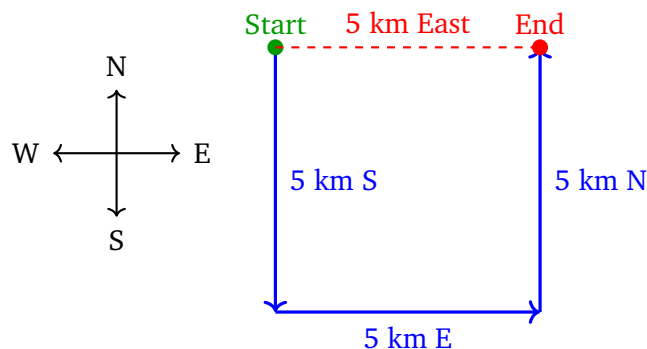


- (C) 11-9-14-13
- (D) 12-8-14-14

Q8. Pointing to a photograph, a man says, “She is the daughter of my grandfather’s only son.” How is she related to him?

- (A) Daughter
- (B) Mother
- (C) Sister
- (D) Niece

Q9. A person walks 5 km towards the South. He then turns left and walks 5 km. He again turns left and walks 5 km. In which direction is he now, relative to his starting point?



- (A) North
- (B) South
- (C) West
- (D) East

Q10. In a row, there are 5 people between P and Q. P is 10th from the left. Q is to the right of P. What is Q’s position from the left?

- (A) 16th
- (B) 15th
- (C) 17th



(D) 14th

Q11. Statements:

All mangoes are fruits.

All fruits are sweet.

Conclusions:

I. All mangoes are sweet.

II. Some sweet things are mangoes.

(A) Only I

(B) Only II

(C) Both I and II

(D) Neither

Q12. Statements:

No rain is snow.

Some snow is cold.

Conclusions:

I. Some cold is not rain.

II. No rain is cold.

(A) Neither

(B) Only I

(C) Only II

(D) Both

Q13. Statement: "Reading newspapers daily keeps you well-informed about current events."

Conclusions:

I. Daily newspaper reading is a useful habit.

II. People who do not read newspapers know nothing about current affairs.

(A) Only II



- (B) Both
- (C) Neither
- (D) Only I

Q14. Statement: “Please switch off the lights before leaving the room.”

Assumptions:

- I. Leaving lights on wastes electricity.
- II. No one will enter the room after you leave.

- (A) Only I
- (B) Only II
- (C) Both
- (D) Neither

Q15. Statement: “Should women be allowed to join the armed forces?”

Arguments:

- I. Yes — women are equally capable and have the right to serve the nation in any capacity.
- II. No — certain combat roles require physical endurance levels that are statistically harder for women to achieve.

- (A) Only I
- (B) Both I and II
- (C) Only II
- (D) Neither

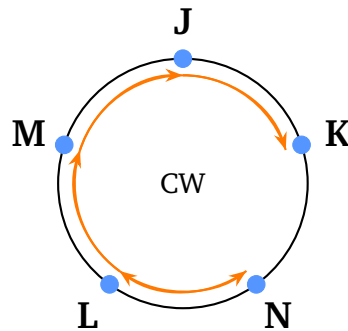
Q16. Seven people A, B, C, D, E, F, G are seated in a row. A is at the extreme left. G is at the extreme right. B is to the immediate right of A. C is to the immediate right of B. D is between E and F. F is to the immediate left of G. What is D's position from the left?

A	B	C	E	D	F	G
1	2	3	4	5	6	7



- (A) 3rd
- (B) 4th
- (C) 5th
- (D) 6th

Q17. Five friends J, K, L, M, N sit around a circular table, all facing the centre. Going clockwise, they are seated in the order: J, K, N, L, M. Who sits to the immediate left of L? (Immediate left = counter-clockwise neighbour.)



- (A) N
- (B) K
- (C) M
- (D) J

Q18. If @ means +, # means −, * means ×, and ^ means ÷:

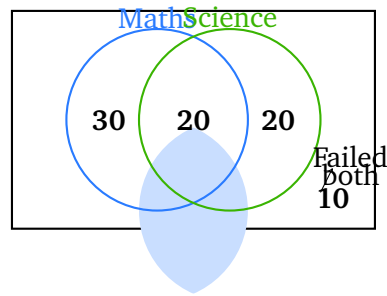
$$50 \wedge 5 * 3 @ 4 \# 7$$

- (A) 23
- (B) 29
- (C) 25
- (D) 27

Q19. In a group of 80 students: 50 passed Mathematics, 40 passed Science, 20 passed both. How many students failed both subjects?



Total = 80

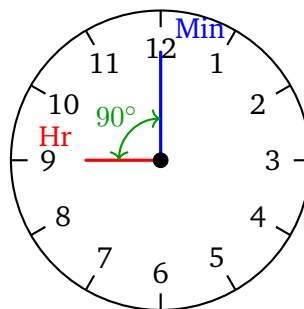


- (A) 5
- (B) 10
- (C) 15
- (D) 20

Q20. If August 15, 1947 was a Friday, what day of the week was August 15, 1948? (Note: 1948 is a leap year.)

- (A) Saturday
- (B) Monday
- (C) Sunday
- (D) Friday

Q21. What is the angle between the minute hand and the hour hand of a clock at 9:00?



- (A) 270°
- (B) 180°
- (C) 45°
- (D) 90°



Q22. Find the next term: $1A, 4D, 9G, 16J, \underline{\hspace{1cm}}$

- (A) 25M
- (B) 24M
- (C) 25N
- (D) 26M

Q23. Which of the following is **NOT** a prime number?

- (A) 17
- (B) 23
- (C) 33
- (D) 29

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

Col 1	Col 2	Col 3
3	6	9
5	10	15
7	14	?

- (A) 18
- (B) 21
- (C) 24
- (D) 28

Q25. A die shows 4 on top and 1 facing towards you. What number is at the bottom?

- (A) 2
- (B) 3
- (C) 5
- (D) 6



Detailed Solutions

Q1.

Solution**Concept: Number Series — Increasing Odd Differences****Step 1 — Find the differences:**

$$6 - 3 = 3, \quad 11 - 6 = 5, \quad 18 - 11 = 7, \quad 27 - 18 = 9$$

Step 2 — Identify the pattern: Differences are consecutive odd numbers: 3, 5, 7, 9, ... The next difference is 11.**Step 3 — Find the missing term:**

$$27 + 11 = 38$$

Why other options are wrong:

- (A) 36: Difference would be 9, not 11.
- (B) 37: Difference would be 10 (even), breaking the odd pattern.
- (C) 39: Difference would be 12, not 11.

38

Answer: (D)

[Go Back to Q1](#)

Q2.

Solution**Concept: Letter Group Series — Skip-one Alphabets****Step 1 — Positional values of each group:**

- ACE = 1, 3, 5
- GIK = 7, 9, 11
- MOQ = 13, 15, 17

Step 2 — Pattern: Each group takes alternate letters (step of 2). Groups themselves jump by 6 positions each time ($1 \rightarrow 7 \rightarrow 13 \rightarrow 19$).

Step 3 — Next group: 19, 21, 23 = S, U, W = SUW

Why other options are wrong:

- (A) STU: Consecutive letters, not alternate.
- (B) TVX: Starts at T (position 20), not 19.
- (D) SWY: Steps of 4, not 2.

SUW

Answer: (C) [Go Back to Q2](#)

Q3.

Solution

Concept: Word Analogy — Craftsperson and Product

Relationship: A cobbler makes/repairs *shoes*. Similarly, a carpenter makes *furniture*.

Why other options are wrong:

- (B) Cloth: Made by a weaver/tailor.
- (C) Metal: Worked by a blacksmith/metalsmith.
- (D) Brick: Laid by a mason/bricklayer.

Furniture

Answer: (A) [Go Back to Q3](#)



Q4.

Solution**Concept: Number Analogy — Squaring****Pattern:** $4^2 = 16$, therefore $9^2 = 81$.**Why other options are wrong:**

- (A) 27: That is 9×3 (multiplication by 3), not squaring.
- (C) 36: That is 6^2 , not 9^2 .
- (D) 72: That is 9×8 , no consistent rule.

81

Answer: (B) [Go Back to Q4](#)

Q5.

Solution**Concept: Odd One Out — Classification of Celestial Bodies****Analysis:**

- Mercury, Venus, Earth are **planets** of the Solar System.
- The **Moon** is Earth's natural *satellite* — not a planet.

Why other options are wrong:

- (A) Mercury: A planet — belongs to the group.
- (B) Venus: A planet — belongs to the group.
- (D) Earth: A planet — belongs to the group.

Moon

Answer: (C) [Go Back to Q5](#)

Q6.

Solution**Concept: Coding-Decoding — Letter Shift +3****Rule:** Each letter is shifted forward by 3 positions in the alphabet.**Encoding WATCH:**

$$W \xrightarrow{+3} Z, \quad A \xrightarrow{+3} D, \quad T \xrightarrow{+3} W, \quad C \xrightarrow{+3} F, \quad H \xrightarrow{+3} K$$

$$\Rightarrow \text{ZDWFK}$$

Why other options are wrong:

- (B) ZBWEK: B and E are incorrect; $A+3=D$, $C+3=F$.
- (C) YCWEJ: Y implies $W+2$; incorrect shift.
- (D) ZDVEJ: V implies $T+2$; incorrect shift.

ZDWFK

Answer: (A) [Go Back to Q6](#)

Q7.

Solution**Concept: Coding-Decoding — Alphabetic Positional Values****Rule:** Replace each letter with its position in the alphabet.**Encoding LION:**

$$L = 12, \quad I = 9, \quad O = 15, \quad N = 14$$

$$\Rightarrow 12-9-15-14$$

Why other options are wrong:

- (A) 12-9-14-13: $N=14$ (not 13); last value should be $N=14$, but O is 15 not 14.
- (C) 11-9-14-13: $L=12$, not 11.
- (D) 12-8-14-14: $I=9$, not 8; $O=15$, not 14.



12-9-15-14

Answer: (B) [Go Back to Q7](#)

Q8.

Solution**Concept: Blood Relations****Step-by-step:**

- My grandfather's only son = **my father**.
- My father's daughter = **my sister**.

Why other options are wrong:

- (A) Daughter: Would require the man to be the father of the person in the photo.
- (B) Mother: My mother is my grandfather's daughter-in-law, not his son's daughter.
- (D) Niece: A niece is a brother's/sister's daughter, not the man's own father's daughter.

Sister

Answer: (C) [Go Back to Q8](#)

Q9.

Solution**Concept: Direction and Distance — Tracking Net Displacement****Step 1:** Start at origin facing South. Walk 5 km South $\Rightarrow$ position $(0, -5)$.**Step 2:** Turn left (now facing East). Walk 5 km East $\Rightarrow$ position $(5, -5)$.**Step 3:** Turn left (now facing North). Walk 5 km North $\Rightarrow$ position $(5, 0)$.**Net displacement:** End $(5, 0)$ vs Start $(0, 0) \Rightarrow$ 5 km due **East**.

Why other options are wrong:

- (A) North: The north-south displacement cancels out.
- (B) South: The person ends level with the start (same latitude).
- (C) West: The east-west movement was towards East, not West.

East

Answer: (D) [Go Back to Q9](#)

Q10.

Solution

Concept: Ranking / Position in a Row

Given: P is 10th from the left. Q is to the right of P with 5 people between them.

Calculation:

$$Q's \text{ position} = P's \text{ position} + 5 \text{ (people between)} + 1 \text{ (Q itself)} = 10 + 5 + 1 = 16$$

Why other options are wrong:

- (B) 15th: Forgets to add 1 for Q itself ($10 + 5 = 15$).
- (C) 17th: Off by one in the other direction.
- (D) 14th: Undercounts; $10 + 4 = 14$.

16th

Answer: (A) [Go Back to Q10](#)



Q11.

Solution**Concept: Syllogism — Universal Affirmative Chain****Set relationships:**

$$\text{Mangoes} \subset \text{Fruits} \subset \text{Sweet things}$$

Conclusion I: All mangoes are sweet. **TRUE** (since Mangoes $\subset$ Sweet).**Conclusion II:** Some sweet things are mangoes. **TRUE** (since Mangoes is a non-empty subset of Sweet).**Why other options are wrong:**

- (A) Only I: Misses Conclusion II, which also follows directly.
- (B) Only II: Misses Conclusion I.
- (D) Neither: Both conclusions follow validly.

Both I and II

Answer: (C) [Go Back to Q11](#)

Q12.

Solution**Concept: Syllogism — Negative with Particular Premise****Given:**

- No rain is snow ($\text{Rain} \cap \text{Snow} = \emptyset$).
- Some snow is cold ($\text{Snow} \cap \text{Cold} \neq \emptyset$).

Conclusion I: Some cold is not rain. Since some snow is cold, and no snow is rain, those cold items (which are also snow) cannot be rain. Hence, **Some cold is not rain — TRUE**.**Conclusion II:** No rain is cold. Rain could independently intersect with cold (e.g., cold rain exists). This conclusion is **uncertain** — cannot be determined.**Why other options are wrong:**

- (A) Neither: Conclusion I does follow.



- (C) Only II: II is uncertain; I is definite.
- (D) Both: II cannot be definitively concluded.

Only I

Answer: (B) [Go Back to Q12](#)

Q13.

Solution

Concept: Statement and Conclusions

Statement: Reading newspapers daily keeps you well-informed.

Conclusion I: Daily newspaper reading is a useful habit. This is a **direct, logical inference** from the statement (being well-informed is useful). **TRUE.**

Conclusion II: People who do not read newspapers know nothing about current affairs. This is **extreme and unjustified** — TV, radio, internet also inform people. **FALSE.**

Why other options are wrong:

- (A) Only II: II does not follow.
- (B) Both: II is not a valid conclusion.
- (C) Neither: I follows clearly.

Only I

Answer: (D) [Go Back to Q13](#)



Q14.

Solution**Concept: Statement and Assumptions**

Statement: Switch off lights before leaving the room.

Assumption I: Leaving lights on wastes electricity. This is **implicitly assumed** — the instruction makes sense only if keeping lights on is wasteful. **VALID**.

Assumption II: No one will enter the room after you leave. This is **not assumed** — the instruction is about energy conservation, not about future occupancy. **INVALID**.

Why other options are wrong:

- (B) Only II: II is not the basis of the instruction.
- (C) Both: II is not a necessary assumption.
- (D) Neither: I is clearly assumed.

Only I

Answer: (A)

[Go Back to Q14](#)

Q15.

Solution**Concept: Statement and Arguments — Strength of Arguments**

Statement: Should women be allowed to join the armed forces?

Argument I: Yes — women are equally capable and have the right to serve. This is **strong**: it is relevant, factually grounded in capability and rights. **Valid**.

Argument II: No — certain combat roles require physical endurance statistically harder for women. This is also **strong**: it is factually grounded, relevant to the specific question of combat roles, and not dismissive. **Valid**.

Why other options are wrong:

- (A) Only I: Argument II is equally grounded and strong.
- (C) Only II: Argument I is equally valid.
- (D) Neither: Both arguments are substantive and relevant.



Both I and II

Answer: (B)

[Go Back to Q15](#)

Q16.

Solution**Concept: Linear Seating Arrangement****Building the arrangement step by step:**

- A is at extreme left $\Rightarrow$ Position 1: **A**
- B is to immediate right of A $\Rightarrow$ Position 2: **B**
- C is to immediate right of B $\Rightarrow$ Position 3: **C**
- G is at extreme right $\Rightarrow$ Position 7: **G**
- F is to immediate left of G $\Rightarrow$ Position 6: **F**
- D is between E and F (position 6). Remaining positions: 4, 5. For D between E and F: E=4, D=5, F=6.

Final arrangement: A(1), B(2), C(3), E(4), D(5), F(6), G(7).

D is at position 5 from the left.

Why other options are wrong:

- (A) 3rd: Position 3 is C.
- (B) 4th: Position 4 is E.
- (D) 6th: Position 6 is F.

5th

Answer: (C)

[Go Back to Q16](#)

Q17.

Solution**Concept: Circular Seating — Reading the Arrangement****Given clockwise order:** J, K, N, L, M (and back to J).

Finding the immediate left of L: Immediate left = counter-clockwise neighbour. Going counter-clockwise from L: the previous person in the clockwise sequence before L is N.

$$J \xrightarrow{\text{CW}} K \xrightarrow{\text{CW}} N \xrightarrow{\text{CW}} L \xrightarrow{\text{CW}} M$$

Counter-clockwise from L = N. So **N sits to the immediate left of L.****Why other options are wrong:**

- (B) K: K is two seats counter-clockwise from L (K is left of N).
- (C) M: M is to the immediate right (clockwise) of L, not left.
- (D) J: J is three seats away from L.

N

Answer: (A) [Go Back to Q17](#)

Q18.

Solution**Concept: Mathematical Operations — Symbol Substitution****Substituting symbols:**

$$50 \wedge 5 * 3 @ 4 \# 7 \equiv 50 \div 5 \times 3 + 4 - 7$$

Applying BODMAS:

$$50 \div 5 = 10$$

$$10 \times 3 = 30$$

$$30 + 4 = 34$$

$$34 - 7 = \mathbf{27}$$



Why other options are wrong:

- (A) 23: Results from ignoring order of operations.
- (B) 29: Arithmetic error in one of the steps.
- (C) 25: Incorrect calculation of $50 \div 5 \times 3$.

27

Answer: (D) [Go Back to Q18](#)

Q19.

Solution

Concept: Venn Diagram — Set Union and Intersection

Given:

- Total students = 80
- Passed Mathematics = 50
- Passed Science = 40
- Passed both = 20

Students who passed at least one subject:

$$n(M \cup S) = n(M) + n(S) - n(M \cap S) = 50 + 40 - 20 = 70$$

Students who failed both:

$$80 - 70 = 10$$

Why other options are wrong:

- (A) 5: Subtracts only $50 + 40 - 80 = 10$, a different calculation.
- (C) 15: Overestimates who passed.
- (D) 20: Equals the overlap, not the failure count.

10



Answer: (B) [Go Back to Q19](#)

Q20.

Solution

Concept: Calendar — Day Calculation Across a Leap Year

Given: August 15, 1947 = Friday.

Period: August 15, 1947 to August 15, 1948 spans 366 days (1948 is a leap year, and February 29, 1948 falls within this interval).

Odd days: $366 = 52 \times 7 + 2$, so there are **2 odd days**.

Day calculation: Friday + 2 = **Sunday**.

Why other options are wrong:

- (A) Saturday: That would be Friday + 1 (365 days, non-leap).
- (B) Monday: Friday + 3; requires 367 days.
- (D) Friday: No change; requires a multiple of 7 days.

Sunday

Answer: (C) [Go Back to Q20](#)

Q21.

Solution

Concept: Clock Angle — Angle Between Hands

At 9:00:

- Minute hand points to **12** (at 90 from the standard reference).
- Hour hand points to **9** (at 270 clockwise from 12, or equivalently 90 counter-clockwise from 12).

Angle between hands: Each hour mark subtends $360^\circ/12 = 30^\circ$. Hours between 12 and 9 (going clockwise): $9 \times 30^\circ = 270^\circ$ (reflex angle).

The **smaller** (interior) angle = $360^\circ - 270^\circ = 90^\circ$.

Why other options are wrong:



- (A) 270° : That is the reflex (larger) angle, not the standard answer.
- (B) 180° : Hands are not opposite (that would be 6:00 or 12:00 positions).
- (C) 45° : Corresponds to 1.5 hour-marks apart, not 3.

90°

Answer: (D) [Go Back to Q21](#)

Q22.

Solution

Concept: Alphanumeric Series — Squares and Every Third Letter

Number pattern: $1^2, 2^2, 3^2, 4^2, 5^2 = 1, 4, 9, 16, 25$

Letter pattern: A(1), D(4), G(7), J(10), **M(13)** — every 3rd letter (+3 each step).

Next term: 25M

Why other options are wrong:

- (B) 24M: 24 is not a perfect square ($5^2 = 25$).
- (C) 25N: N is the 14th letter; pattern requires M (13th).
- (D) 26M: 26 is not a perfect square.

25M

Answer: (A) [Go Back to Q22](#)

Q23.

Solution

Concept: Odd One Out — Prime Numbers

Testing each option:

- 17: Divisible only by 1 and 17 — **Prime**.
- 23: Divisible only by 1 and 23 — **Prime**.



- 33: $33 = 3 \times 11$ — **Not prime** (composite).
- 29: Divisible only by 1 and 29 — **Prime**.

Why other options are wrong:

- (A) 17: Is prime, so it belongs in the group.
- (B) 23: Is prime, so it belongs in the group.
- (D) 29: Is prime, so it belongs in the group.

33

Answer: (C) [Go Back to Q23](#)

Q24.

Solution

Concept: Missing Number in Grid — Multiplication Pattern

Pattern analysis:

- Row 1: 3, 6, 9 $\Rightarrow$ Col2 = $2 \times$ Col1, Col3 = $3 \times$ Col1.
- Row 2: 5, 10, 15 $\Rightarrow$ Col2 = $2 \times 5 = 10$, Col3 = $3 \times 5 = 15$. ✓
- Row 3: 7, 14, ? $\Rightarrow$ Col3 = $3 \times 7 = 21$.

Why other options are wrong:

- (A) 18: $3 \times 7 = 21$, not 18. (18 would come from $7 + 11$.)
- (C) 24: $24 = 3 \times 8$; would require Col1 to be 8.
- (D) 28: $28 = 4 \times 7$; wrong multiplier.

21

Answer: (B) [Go Back to Q24](#)



Q25.

Solution**Concept: Dice — Opposite Face Rule****Standard die rule:** Opposite faces always sum to 7.

Opposite pairs: (1, 6), (2, 5), (3, 4)

Given: Top face = 4.**Bottom face** = $7 - 4 = 3$.**Why other options are wrong:**

- (A) 2: 2 is opposite to 5, not to 4.
- (C) 5: 5 is opposite to 2, not to 4.
- (D) 6: 6 is opposite to 1, not to 4.

3

Answer: (B)

[Go Back to Q25](#)

Answer Key

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

