

MAH BEd CET — Mental Ability

Sample Paper – 7

Duration: 36 Minutes

Maximum Marks: 40

Instructions

- This paper contains **40** Multiple Choice Questions (Single Correct Answer), modelled on the Mental Ability portion of **MAH BEd CET**.
- Each correct answer carries **+1 mark**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct. Choose carefully.
- Topics: Series, Analogies, Coding-Decoding, Classification, Syllogism, Blood Relations, Direction Sense, Dice Problems, Pattern Recognition.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited. This is an OMR-based pen-and-paper test.

Q1. Find the missing term in the series:

1, 2, 4, 8, 16, ____

- (A) 32
- (B) 30
- (C) 34
- (D) 28

Q2. Find the missing term in the series:

0, 2, 6, 12, 20, ____

- (A) 28
- (B) 26
- (C) 30
- (D) 32



Q3. Find the missing term in the series (the differences between consecutive terms are prime numbers in increasing order):

1, 3, 8, 15, 26, ____

- (A) 37
- (B) 39
- (C) 41
- (D) 43

Q4. Find the missing letter in the series (every 4th letter of the alphabet):

D, H, L, P, ____

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

Q5. Find the missing term in the series (triangular numbers):

1, 3, 6, 10, 15, ____

- (A) 21
- (B) 20
- (C) 18
- (D) 22

Q6. Find the missing letter in the series (every 6th letter of the alphabet):

A, G, M, S, ____

- (A) W
- (B) X
- (C) Y
- (D) Z



Q7. Find the next term in the series:

9, 18, 27, 36, 45, ____

- (A) 52
- (B) 53
- (C) 55
- (D) 54

Q8. Choose the word that best completes the analogy:

India : Hindi :: Brazil : ____

- (A) Spanish
- (B) Portuguese
- (C) French
- (D) English

Q9. Choose the word that best completes the analogy:

Pond : Lake :: Hill : ____

- (A) River
- (B) Valley
- (C) Plain
- (D) Mountain

Q10. Choose the number that best completes the analogy:

10 : 4 :: 20 : ____

(Each number on the left is paired with the count of prime numbers up to it.)

- (A) 8
- (B) 6
- (C) 7
- (D) 9

Q11. Choose the word that best completes the analogy:

Doctor : MBBS :: Engineer : ____



- (A) LLB
- (B) MBA
- (C) B.Tech
- (D) CA

Q12. Choose the word that best completes the analogy:

Army : Soldier :: Flock : ____

- (A) Fish
- (B) Bird
- (C) Insect
- (D) Animal

Q13. Choose the word that best completes the analogy:

Second : Minute :: Minute : ____

- (A) Second
- (B) Day
- (C) Week
- (D) Hour

Q14. Choose the word that best completes the analogy:

Line : Plane :: Plane : ____

- (A) Solid
- (B) Space
- (C) Volume
- (D) Cube

Q15. If COLD is coded as EMPD (word is reversed, then each letter is shifted +1), then WARM is coded as ____

- (A) NRAW
- (B) MRAX
- (C) NSBX



(D) NSAX

Q16. If the value of a word equals the sum of the alphabetic positions of its letters ($A=1, B=2, \dots, Z=26$), then the value of LOGIC is ____

(A) 44

(B) 46

(C) 48

(D) 50

Q17. If BANK is coded as CBOL (each letter shifted +1 in the alphabet), then WATCH is coded as ____

(A) XBUCK

(B) XBUCI

(C) YBUDI

(D) XBUDI

Q18. If BRANCH is coded as BAC (only letters at positions 1, 3 and 5 are retained in order), then PLANET is coded as ____

(A) PAE

(B) LNT

(C) PLE

(D) ANT

Q19. Using the mirror-alphabet rule ($A \leftrightarrow Z, B \leftrightarrow Y, C \leftrightarrow X, \dots$), HOPE is coded as ____

(A) TLJV

(B) SLKV

(C) SLKW

(D) SMKV

Q20. If CAT is coded as DCW (1st letter+1, 2nd letter+2, 3rd letter+3), then FISH is coded as ____



- (A) GJVL
- (B) GKVK
- (C) GKVL
- (D) HJVL

Q21. Which one does **NOT** belong to the same group?

Moon Titan Callisto Sputnik

- (A) Moon
- (B) Titan
- (C) Callisto
- (D) Sputnik

Q22. Which one does **NOT** belong to the same group?

Iron Oxygen Carbon Water

- (A) Water
- (B) Iron
- (C) Oxygen
- (D) Carbon

Q23. Which one does **NOT** belong to the same group?

Cube Cylinder Sphere Square

- (A) Cube
- (B) Cylinder
- (C) Square
- (D) Sphere

Q24. Which one does **NOT** belong to the same group?

Asia Africa Europe Atlantic

- (A) Asia
- (B) Atlantic
- (C) Africa



(D) Europe

Q25. Which one does **NOT** belong to the ABO blood group system?

A AB O X

(A) A

(B) AB

(C) O

(D) X

Q26. Which one does **NOT** belong to the group of renewable energy sources?

Solar Wind Nuclear Hydro

(A) Solar

(B) Wind

(C) Nuclear

(D) Hydro

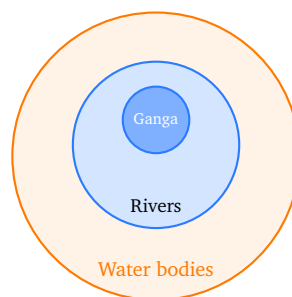
Q27. Statements:

(1) All rivers have water. (2) The Ganga is a river.

Conclusions:

I. The Ganga has water. II. All water bodies are rivers.

Which conclusion(s) follow?



(A) Only I

(B) Only II

(C) Both I and II

(D) Neither



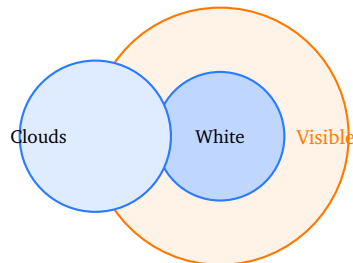
Q28. Statements:

(1) Some clouds are white. (2) All white things are visible.

Conclusions:

I. All clouds are visible. II. Some clouds are visible.

Which conclusion(s) follow?



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

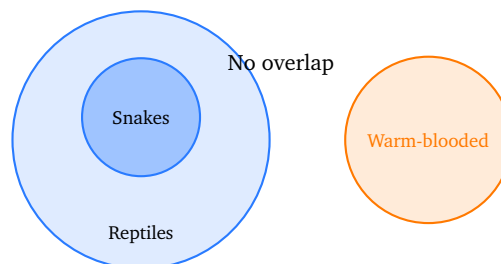
Q29. Statements:

(1) All snakes are reptiles. (2) No reptile is warm-blooded.

Conclusions:

I. No snake is warm-blooded. II. Some reptiles are snakes.

Which conclusion(s) follow?



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

Q30. Statements:

(1) Some cars are electric. (2) Some electric vehicles are motorcycles.



Conclusions:

I. Some cars are motorcycles. II. All motorcycles are electric.

Which conclusion(s) follow?

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

Q31. Statements:

(1) All stones are heavy. (2) Some heavy things break glass.

Conclusions:

I. All stones break glass. II. Some heavy things are stones.

Which conclusion(s) follow?

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

Q32. Ramu's son is Shyam. Shyam's sister is Meera. What is Ramu's relation to Meera?

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

Q33. A said to B, "Your mother is my mother's daughter." How is B related to A?

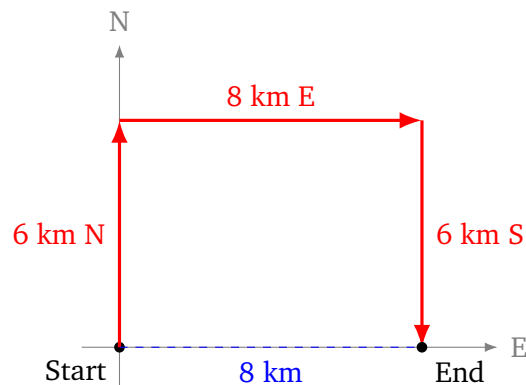
- (A) Nephew
- (B) Son
- (C) Brother
- (D) Cousin



Q34. P is Q's daughter. R is P's mother. How is Q related to R?

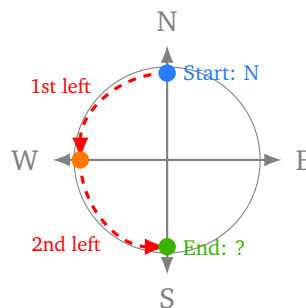
- (A) Son
- (B) Father
- (C) Brother
- (D) Husband

Q35. A man walks 6 km North, then turns right and walks 8 km East, then turns right and walks 6 km South. How far is he from the starting point?



- (A) 6 km
- (B) 12 km
- (C) 8 km
- (D) 10 km

Q36. A person faces **North**. He turns left and then turns left again. In which direction does he now face?

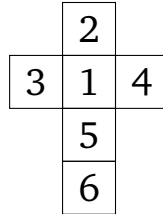


- (A) North
- (B) South
- (C) East



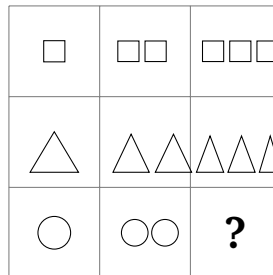
(D) West

Q37. The cross-shaped net below is folded to form a cube. Which face is **opposite** to face 6?



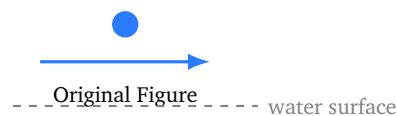
- (A) 1
- (B) 2
- (C) 3
- (D) 4

Q38. Study the 3×3 figure matrix. What should replace the **question mark**?



- (A) ○ ○ ○
- (B) △ △
- (C) □
- (D) □ □ □

Q39. The figure below shows an arrow with a dot. What is its **water image** (reflection about the horizontal water surface)?



- (A) ← with • above
- (B) → with • below



(C) $\rightarrow$ with $\bullet$ above

(D) $\leftarrow$ with $\bullet$ below

Q40. Study the 3×3 number grid. What should replace the **question mark**?

2	4	8
3	9	27
4	16	?

(A) 48

(B) 32

(C) 36

(D) 64



Detailed Solutions

Q1.

Solution

Concept — Powers of 2 (geometric series, ratio = 2): Each term is obtained by multiplying the previous term by 2.

Step 1 — Verify ratio: $2 \div 1 = 2$, $4 \div 2 = 2$, $8 \div 4 = 2$, $16 \div 8 = 2$. Confirmed ratio $r = 2$.

Step 2 — Next term: $16 \times 2 = 32$.

Why other options are wrong:

- Option B (30): $16 \times 2 \neq 30$; not a power of 2.
- Option C (34): not a power of 2.
- Option D (28): not a power of 2.

Final Answer: $16 \times 2 = 32 \Rightarrow$ A

Answer: (A) [Go Back to Q 1](#)

Q2.

Solution

Concept — Formula $n(n - 1)$ series: The n -th term equals $n(n - 1)$.

Step 1 — Verify formula: $1(0) = 0$, $2(1) = 2$, $3(2) = 6$, $4(3) = 12$, $5(4) = 20$. All match.

Step 2 — Next term ($n = 6$): $6(5) = 30$.

Alternative view (difference method): Gaps between terms: 2, 4, 6, 8 (increasing by 2). Next gap = 10; $20 + 10 = 30$.

Why other options are wrong:

- Option A (28): $20 + 8$; repeats the previous gap.
- Option B (26): $20 + 6$; uses an earlier gap.
- Option D (32): $20 + 12$; skips ahead of the pattern.

Final Answer: $6 \times 5 = 30 \Rightarrow$ C

Answer: (C) [Go Back to Q 2](#)



Q3.

Solution

Concept — Prime-difference series: The differences between consecutive terms are prime numbers arranged in ascending order.

Step 1 — Identify differences:

$$3 - 1 = 2, \quad 8 - 3 = 5, \quad 15 - 8 = 7, \quad 26 - 15 = 11$$

Differences: 2, 5, 7, 11 — all prime numbers in ascending order.

Step 2 — Find next difference: The next prime in the sequence after 11 is 13.

Step 3 — Next term: $26 + 13 = 39$.

Why other options are wrong:

- Option A (37): implies next difference = 11; repeats the previous prime.
- Option C (41): implies next difference = 15; 15 is not prime.
- Option D (43): implies next difference = 17; skips the prime 13.

Final Answer: $26 + 13 = 39 \Rightarrow$ B

Answer: (B) [Go Back to Q 3](#)

Q4.

Solution

Concept — Every 4th letter series: Each letter is 4 positions ahead of the previous one in the alphabet.

Step 1 — Verify positions: D= 4, H= 8, L= 12, P= 16. Each increases by 4.

Step 2 — Next position: $16 + 4 = 20$. The 20th letter of the alphabet is T.

Why other options are wrong:

- Option A (R): position 18 (gap of only 2).
- Option B (S): position 19 (gap of 3).
- Option C (U): position 21 (gap of 5, too large).

Final Answer: Position 20 = T $\Rightarrow$ D

Answer: (D) [Go Back to Q 4](#)



Q5.

Solution

Concept — Triangular numbers: The n -th triangular number equals $\frac{n(n+1)}{2}$.

Step 1 — Verify: $T_1 = 1, T_2 = 3, T_3 = 6, T_4 = 10, T_5 = 15$ ✓

Step 2 — Next term ($n = 6$): $T_6 = \frac{6 \times 7}{2} = 21$.

Alternative view (difference method): Gaps: 2, 3, 4, 5 (each increases by 1).
Next gap = 6; $15 + 6 = 21$.

Why other options are wrong:

- Option B (20): $15 + 5$; repeats the previous gap.
- Option C (18): $15 + 3$; uses an earlier gap.
- Option D (22): $15 + 7$; skips the pattern.

Final Answer: $T_6 = 21 \Rightarrow \boxed{A}$

Answer: (A) [Go Back to Q 5](#)

Q6.

Solution

Concept — Every 6th letter series: Each letter is 6 positions ahead of the previous one.

Step 1 — Verify positions: A = 1, G = 7, M = 13, S = 19. Each increases by 6.

Step 2 — Next position: $19 + 6 = 25$. The 25th letter is Y.

Why other options are wrong:

- Option A (W): position 23 (gap of only 4).
- Option B (X): position 24 (gap of 5).
- Option D (Z): position 26 (gap of 7, too large).

Final Answer: Position 25 = Y $\Rightarrow \boxed{C}$

Answer: (C) [Go Back to Q 6](#)



Q7.

Solution

Concept — Multiples of 9 (arithmetic series): Each term increases by 9.

Step 1 — Verify: $18 - 9 = 9$, $27 - 18 = 9$, $36 - 27 = 9$, $45 - 36 = 9$. Confirmed $d = 9$.

Step 2 — Next term: $45 + 9 = 54$.

Why other options are wrong:

- Option A (52): $45 + 7$; wrong difference.
- Option B (53): $45 + 8$; wrong difference.
- Option C (55): $45 + 10$; wrong difference.

Final Answer: $45 + 9 = 54 \Rightarrow$ D

Answer: (D) [Go Back to Q 7](#)

Q8.

Solution

Concept — Country:Official language analogy: Each country is paired with its official or most widely spoken national language.

Step 1 — Identify relationship: India's official language = Hindi. Brazil's official language = Portuguese (Brazil was colonised by Portugal and Portuguese has been the official language since independence).

Why other options are wrong:

- Option A (Spanish): Spanish is the official language of most other South American countries, but **not** Brazil.
- Option C (French): spoken in France, Belgium, and parts of Africa; not Brazil.
- Option D (English): official in many countries, but not Brazil.

Final Answer: Brazil $\rightarrow$ Portuguese $\Rightarrow$ B

Answer: (B) [Go Back to Q 8](#)



Q9.

Solution

Concept — Size hierarchy (smaller to larger) analogy: Each pair links a smaller geographical feature to its larger counterpart of the same type.

Step 1 — Identify pattern: Pond → Lake (both standing water bodies; a lake is significantly larger than a pond). Hill → Mountain (both elevated landforms; a mountain is significantly larger/higher than a hill).

Why other options are wrong:

- Option A (River): a flowing water body, not an elevated landform.
- Option B (Valley): a low-lying landform between hills/mountains, not larger than a hill.
- Option C (Plain): a flat, low landform; not the larger counterpart of a hill.

Final Answer: Hill → Mountain $\Rightarrow$ D

Answer: (D) [Go Back to Q 9](#)

Q10.

Solution

Concept — Prime-counting function $\pi(n)$ analogy: Each number n is paired with $\pi(n)$, the count of prime numbers $\leq n$.

Step 1 — Verify: Primes ≤ 10 : $\{2, 3, 5, 7\} \Rightarrow \pi(10) = 4 \checkmark$

Step 2 — Apply to 20: Primes ≤ 20 : $\{2, 3, 5, 7, 11, 13, 17, 19\} \Rightarrow \pi(20) = 8$.

Why other options are wrong:

- Option B (6): misses primes 11, 13, 17, 19 (counts only up to 13 or similar).
- Option C (7): misses one prime in the list $\{2, 3, 5, 7, 11, 13, 17, 19\}$.
- Option D (9): overcounts; there are exactly 8 primes ≤ 20 .

Final Answer: $\pi(20) = 8 \Rightarrow$ A

Answer: (A) [Go Back to Q 10](#)



Q11.

Solution

Concept — Profession:Required degree analogy: Each profession is paired with the undergraduate degree required to enter it.

Step 1 — Verify: Doctor requires **MBBS** (Bachelor of Medicine and Bachelor of Surgery). Engineer requires **B.Tech** (Bachelor of Technology).

Why other options are wrong:

- Option A (LLB): the degree for a Lawyer/Advocate.
- Option B (MBA): a postgraduate management degree, not required for engineering.
- Option D (CA): Chartered Accountant qualification, not related to engineering.

Final Answer: Engineer → B.Tech ⇒ C

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

Q12.

Solution

Concept — Collective noun:Member analogy: Each collective noun is paired with the animal it refers to collectively.

Step 1 — Identify relationship: An Army is a collection of Soldiers. A Flock is the standard collective noun for a group of Birds (e.g., a flock of sparrows, pigeons, etc.).

Why other options are wrong:

- Option A (Fish): a group of fish is called a “shoal” or “school”, not a flock.
- Option C (Insect): a group of insects is a “swarm” or “colony”, not a flock.
- Option D (Animal): too general; the specific collective noun “flock” applies to birds.

Final Answer: Flock → Bird ⇒ B

Answer: (B) [Go Back to Q 12](#)



Q13.

Solution

Concept — Time-unit progression analogy: Each unit of time is paired with the next larger unit in the standard sequence.

Step 1 — Identify the relationship: 60 Seconds = 1 Minute; 60 Minutes = 1 Hour. So Second $\rightarrow$ Minute and Minute $\rightarrow$ Hour (each is the next step up in the time hierarchy).

Why other options are wrong:

- Option A (Second): going backward, not forward in the hierarchy.
- Option B (Day): skips the unit immediately above Minute (which is Hour).
- Option C (Week): two units above Minute in the hierarchy; too far a jump.

Final Answer: Minute $\rightarrow$ Hour $\Rightarrow$ D

Answer: (D) [Go Back to Q 13](#)

Q14.

Solution

Concept — Dimensional hierarchy analogy: Each geometric entity is paired with the next higher-dimensional counterpart generated by extending it in a new direction.

Step 1 — Identify relationship:

- A **Line** is a 1-D figure. Moving it in a perpendicular direction sweeps out a **Plane** (2-D).
- A **Plane** is a 2-D figure. Moving it in a perpendicular direction sweeps out a **Solid** (3-D).

Why other options are wrong:

- Option B (Space): “space” is informal and can denote any dimension; not the precise geometric term for a 3-D figure.
- Option C (Volume): a measurement (cubic units), not a geometric entity.
- Option D (Cube): a specific solid, not the general category of 3-D figures.

Final Answer: Plane $\rightarrow$ Solid $\Rightarrow$ A

Answer: (A) [Go Back to Q 14](#)



Q15.

Solution

Concept — Reverse then shift +1 coding: Step 1: reverse the word. Step 2: shift every letter one position forward in the alphabet.

Step 1 — Verify with COLD: COLD reversed = DLOC. Then $D+1 = E$, $L+1 = M$, $O+1 = P$, $C+1 = D \Rightarrow EMPD \checkmark$

Step 2 — Apply to WARM: WARM reversed = MRAW. Then:

$$M(13) + 1 = N(14), \quad R(18) + 1 = S(19), \quad A(1) + 1 = B(2), \quad W(23) + 1 = X(24)$$

$\Rightarrow$ NSBX

Why other options are wrong:

- Option A (NRAW): letters are not shifted; merely reversed without the +1 step.
- Option B (MRAX): mixed letters that do not follow either step correctly.
- Option D (NSAX): treats A as unchanged ($A + 1 \neq A$; should give B, not A).

Final Answer: WARM $\rightarrow$ MRAW $\rightarrow$ NSBX $\Rightarrow$ C

Answer: (C) [Go Back to Q 15](#)

Q16.

Solution

Concept — Letter-sum (positional value) coding: The value of a word equals the sum of the alphabetic positions of all its letters ($A = 1, B = 2, \dots, Z = 26$).

Step 1 — Find positions of LOGIC:

$$L = 12, \quad O = 15, \quad G = 7, \quad I = 9, \quad C = 3$$

Step 2 — Sum: $12 + 15 + 7 + 9 + 3 = 46$.

Why other options are wrong:

- Option A (44): $12 + 15 + 7 + 7 + 3 = 44$; incorrectly uses 7 for I instead of 9.
- Option C (48): $12 + 15 + 9 + 9 + 3 = 48$; uses 9 for G instead of 7.
- Option D (50): $12 + 15 + 9 + 11 + 3 = 50$; replaces C with K (position 11).

Final Answer: $12 + 15 + 7 + 9 + 3 = 46 \Rightarrow$ B



Answer: (B) [Go Back to Q 16](#)

Q17.

Solution

Concept — Letter-shift coding (+1): Each letter is replaced by the letter immediately following it in the alphabet.

Step 1 — Verify with BANK: $B(2) + 1 = C$, $A(1) + 1 = B$, $N(14) + 1 = O$, $K(11) + 1 = L$
 $\Rightarrow$ CBOL ✓

Step 2 — Apply to WATCH:

$W(23) + 1 = X$, $A(1) + 1 = B$, $T(20) + 1 = U$, $C(3) + 1 = D$, $H(8) + 1 = I$
 $\Rightarrow$ XBUDI

Why other options are wrong:

- Option A (XBUCK): $C+1 = D$ not C; $K+1 = L$ not K.
- Option B (XBUCI): $C+1 = D$, not C; and $I \neq H+1$.
- Option C (YBUDI): $W+1 = X$, not Y.

Final Answer: WATCH $\rightarrow$ XBUDI $\Rightarrow$ **D**

Answer: (D) [Go Back to Q 17](#)

Q18.

Solution

Concept — Odd-position letter extraction: Only the letters at positions 1, 3, and 5 (odd positions) are retained, in their original order.

Step 1 — Verify with BRANCH: B(1) R(2) A(3) N(4) C(5) H(6). Odd positions {1, 3, 5}: B, A, C $\Rightarrow$ BAC ✓

Step 2 — Apply to PLANET: P(1) L(2) A(3) N(4) E(5) T(6). Odd positions {1, 3, 5}: P, A, E $\Rightarrow$ PAE

Why other options are wrong:

- Option B (LNT): letters at even positions {2, 4, 6}; incorrect.
- Option C (PLE): mixes positions (P at 1, L at 2, E at 5); takes position 2 instead of 3.



- Option D (ANT): A is at position 3, N at 4, T at 6; includes even positions.

Final Answer: PLANET odd-position letters = PAE $\Rightarrow$ A

Answer: (A) [Go Back to Q 18](#)

Q19.

Solution

Concept — Mirror-alphabet coding: The letter at position p maps to the letter at position $27 - p$ (i.e., $A \leftrightarrow Z$, $B \leftrightarrow Y$, $C \leftrightarrow X$, ...).

Step 1 — Apply to HOPE:

- $H = 8 \rightarrow 27 - 8 = 19 = S$
- $O = 15 \rightarrow 27 - 15 = 12 = L$
- $P = 16 \rightarrow 27 - 16 = 11 = K$
- $E = 5 \rightarrow 27 - 5 = 22 = V$

HOPE $\rightarrow$ SLKV

Why other options are wrong:

- Option A (TLJV): $T = 20 \neq 27 - 8$; L is correct but $J = 10 \neq 27 - 15$.
- Option C (SLKW): $W = 23 \neq 27 - 5 = 22$; E maps to V, not W.
- Option D (SMKV): $M = 13 \neq 27 - 15 = 12$; O maps to L, not M.

Final Answer: HOPE $\rightarrow$ SLKV $\Rightarrow$ B

Answer: (B) [Go Back to Q 19](#)

Q20.

Solution

Concept — Position-based progressive shift coding: The letter at position k in the word is shifted forward by k places in the alphabet.

Step 1 — Verify with CAT: $C(\text{pos } 1)+1 = D$, $A(\text{pos } 2)+2 = C$, $T(\text{pos } 3)+3 = W$
 $\Rightarrow$ DCW $\checkmark$

Step 2 — Apply to FISH:

$$F(1) + 1 = G, \quad I(2) + 2 = K, \quad S(3) + 3 = V, \quad H(4) + 4 = L$$



⇒ GKVL

Why other options are wrong:

- Option A (GJVL): $J = 10 \neq I(9) + 2 = 11 = K$; wrong shift at position 2.
- Option B (GKVK): $K = 11$ is correct for position 2, but $K \neq H(8) + 4 = 12 = L$ at position 4.
- Option D (HJVL): $H + 1 = I$, not H; wrong at position 1.

Final Answer: FISH → GKVL ⇒ C

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

Q21.

Solution

Concept — Classification: natural vs. artificial satellite:

Step 1 — Categorise each:

- Moon → Earth's natural satellite.
- Titan → Saturn's largest natural satellite (moon).
- Callisto → one of Jupiter's large natural moons.
- Sputnik → the first **artificial** (man-made) satellite, launched by the Soviet Union in 1957.

Moon, Titan, and Callisto are all natural satellites; Sputnik is man-made and does not belong.

Why other options are wrong:

- Option A (Moon): natural satellite of Earth; belongs.
- Option B (Titan): natural satellite of Saturn; belongs.
- Option C (Callisto): natural satellite of Jupiter; belongs.

Final Answer: Sputnik (artificial satellite) ⇒ D

Answer: (D) [Go Back to Q 21](#)



Q22.

Solution**Concept — Classification: chemical element vs. compound:****Step 1 — Categorise each:**

- Iron (Fe) → a pure chemical **element**.
- Oxygen (O) → a pure chemical **element**.
- Carbon (C) → a pure chemical **element**.
- Water (H₂O) → a chemical **compound** made of hydrogen and oxygen.

Iron, Oxygen, and Carbon are elements; Water is the odd one out.

Why other options are wrong:

- Option B (Iron): a pure element; belongs to the group.
- Option C (Oxygen): a pure element; belongs to the group.
- Option D (Carbon): a pure element; belongs to the group.

Final Answer: Water (compound, not element) ⇒ AAnswer: (A) [Go Back to Q 22](#)

Q23.

Solution**Concept — Classification: 2-D vs. 3-D geometric figures:****Step 1 — Categorise each:**

- Cube → a **3-D** solid (six square faces).
- Cylinder → a **3-D** solid.
- Sphere → a **3-D** solid.
- Square → a **2-D** flat figure (four equal sides, all angles 90°).

Cube, Cylinder, and Sphere are all three-dimensional; Square is the odd one out.

Why other options are wrong:

- Option A (Cube): 3-D solid; belongs.
- Option B (Cylinder): 3-D solid; belongs.
- Option D (Sphere): 3-D solid; belongs.

Final Answer: Square (2-D, not 3-D) ⇒ C

Answer: (C) [Go Back to Q 23](#)

Q24.

Solution

Concept — Classification: continent vs. ocean:

Step 1 — Categorise each:

- Asia → a **continent** (the world's largest).
- Africa → a **continent**.
- Europe → a **continent**.
- Atlantic → the Atlantic **Ocean**; a large body of water, not a continent.

Why other options are wrong:

- Option A (Asia): a continent; belongs.
- Option C (Africa): a continent; belongs.
- Option D (Europe): a continent; belongs.

Final Answer: Atlantic (ocean, not continent) ⇒ **B**

Answer: (B) [Go Back to Q 24](#)

Q25.

Solution

Concept — Classification: valid ABO blood groups: The ABO blood group system recognises four groups: A, B, AB, and O.

Step 1 — Evaluate each option:

- A → a valid ABO blood group (carries A antigens).
- AB → a valid ABO blood group (carries both A and B antigens).
- O → a valid ABO blood group (carries neither antigen; universal donor).
- X → **not** a recognised ABO blood group.

Why other options are wrong:

- Option A (A): valid blood group; belongs.
- Option B (AB): valid blood group; belongs.
- Option C (O): valid blood group; belongs.



Final Answer: X is not a valid ABO blood group $\Rightarrow$ D

Answer: (D) [Go Back to Q 25](#)

Q26.

Solution

Concept — Classification: renewable vs. non-renewable energy:

Step 1 — Categorise each:

- Solar $\rightarrow$ **renewable** (energy from sunlight; inexhaustible).
- Wind $\rightarrow$ **renewable** (energy from wind; inexhaustible).
- Hydro $\rightarrow$ **renewable** (energy from flowing water; replenished by rain cycle).
- Nuclear $\rightarrow$ **non-renewable** (uses uranium/plutonium, which are finite, mined resources; does not replenish naturally on human timescales).

Why other options are wrong:

- Option A (Solar): renewable; belongs.
- Option B (Wind): renewable; belongs.
- Option D (Hydro): renewable; belongs.

Final Answer: Nuclear (non-renewable) $\Rightarrow$ C

Answer: (C) [Go Back to Q 26](#)

Q27.

Solution

Concept — Universal Affirmative Syllogism (Barbara form):

Step 1 — Map the statements:

- S1: All Rivers $\subseteq$ (things that have water).
- S2: Ganga $\in$ Rivers.

Step 2 — Test conclusions:

- **Conclusion I** (Ganga has water): Ganga $\in$ Rivers $\subseteq$ (things with water) $\Rightarrow$ Ganga has water. **VALID** ✓
- **Conclusion II** (All water bodies are rivers): This is the *converse* of S1, which is not logically implied. A pond, lake, or ocean has water but is not a river.



INVALID ×

Why other options are wrong:

- Option B (Only II): II does not follow.
- Option C (Both): II is invalid.
- Option D (Neither): I is valid.

Final Answer: Only Conclusion I follows ⇒ **A****Answer: (A)** [Go Back to Q 27](#)

Q28.

Solution

Concept — Particular + Universal Affirmative Syllogism:

Step 1 — Map the statements:

- S1: Some Clouds are White $\Rightarrow$ Clouds $\cap$ White $\neq \emptyset$.
- S2: All White $\subseteq$ Visible.

Step 2 — Test conclusions:

- **Conclusion I** (All clouds are visible): Only *some* clouds are white; the remaining clouds may not be visible. **INVALID** ×
- **Conclusion II** (Some clouds are visible): The white clouds are clouds, and white clouds $\subseteq$ Visible $\Rightarrow$ those clouds are visible. Hence *some* clouds are visible. **VALID** ✓

Why other options are wrong:

- Option A (Only I): I is invalid.
- Option C (Both): I is invalid.
- Option D (Neither): II is valid.

Final Answer: Only Conclusion II follows ⇒ **B****Answer: (B)** [Go Back to Q 28](#)

Q29.

Solution**Concept — Universal Affirmative + Universal Negative chain:****Step 1 — Map the statements:**

- S1: All Snakes $\subseteq$ Reptiles.
- S2: No Reptile is warm-blooded ($\text{Reptiles} \cap \text{Warm-blooded} = \emptyset$).

Step 2 — Test conclusions:

- **Conclusion I** (No snake is warm-blooded): Snakes $\subseteq$ Reptiles, and Reptiles $\cap$ Warm-blooded $= \emptyset \Rightarrow \text{Snakes} \cap \text{Warm-blooded} = \emptyset$. **VALID** ✓
- **Conclusion II** (Some reptiles are snakes): From S1, Snakes $\subseteq$ Reptiles. Since there exist snakes, snakes are a non-empty subset of reptiles $\Rightarrow$ some reptiles are snakes. **VALID** ✓

Why other options are wrong:

- Option A (Only I): II also follows.
- Option B (Only II): I also follows.
- Option D (Neither): Both follow.

Final Answer: Both conclusions follow $\Rightarrow$ CAnswer: (C) [Go Back to Q 29](#)

Q30.

Solution**Concept — Particular + Particular gives no definite conclusion:** When both premises use “some”, no definite universal or particular conclusion about non-overlapping sets is guaranteed.**Step 1 — Map the statements:**

- S1: Some Cars are Electric (partial overlap: $\text{Cars} \cap \text{Electric} \neq \emptyset$).
- S2: Some Electric Vehicles are Motorcycles (partial overlap: $\text{Electric} \cap \text{Motorcycles} \neq \emptyset$).

Step 2 — Test conclusions:

- **Conclusion I** (Some cars are motorcycles): The electric cars (from S1) and the electric motorcycles (from S2) may be entirely different electric vehicles with no overlap. No guarantee that any car is a motorcycle. **INVALID** ×
- **Conclusion II** (All motorcycles are electric): S2 says only *some* electric vehicles are motorcycles; it says nothing about motorcycles that may be petrol-powered. **INVALID** ×

Why other options are wrong:

- Option A (Only I): I does not follow.
- Option B (Only II): II does not follow.
- Option C (Both): Neither follows.

Final Answer: Neither conclusion follows $\Rightarrow$ D

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

Q31.

Solution

Concept — Universal + Particular Affirmative:

Step 1 — Map the statements:

- S1: All Stones $\subseteq$ Heavy things.
- S2: Some Heavy things break glass ($\text{Heavy} \cap \text{Glass-breakers} \neq \emptyset$).

Step 2 — Test conclusions:

- **Conclusion I** (All stones break glass): S2 says only *some* heavy things break glass. Stones are heavy, but we cannot conclude all stones are in the glass-breaking subset. **INVALID** ×
- **Conclusion II** (Some heavy things are stones): From S1, all stones are heavy $\Rightarrow$ stones form a non-empty subset of heavy things $\Rightarrow$ some heavy things are stones (valid converse of a universal affirmative when the subject class is non-empty). **VALID** ✓

Why other options are wrong:

- Option A (Only I): I is invalid.
- Option C (Both): I is invalid.
- Option D (Neither): II is valid.



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

Answer: (B) [Go Back to Q 31](#)

Q32.

Solution

Concept — Blood relation chain (father $\rightarrow$ son $\rightarrow$ sister):

Step 1 — Trace the chain:

- Ramu's son = Shyam $\Rightarrow$ Ramu is Shyam's **father**.
- Shyam's sister = Meera $\Rightarrow$ Meera is a child of Shyam's parents.
- Since Ramu is Shyam's father and Meera is Shyam's sister, Meera is also **Ramu's daughter**.

Therefore, Ramu's relation to Meera = **Father**.

Why other options are wrong:

- Option A (Uncle): Ramu is the direct father, not an uncle.
- Option B (Grandfather): Ramu would need to be one generation above Meera's parents; here he is her parent.
- Option D (Brother): Ramu is a generation above Meera.

Final Answer: Ramu is Meera's Father $\Rightarrow$ **C**

Answer: (C) [Go Back to Q 32](#)

Q33.

Solution

Concept — Indirect blood relation via “mother's daughter” phrasing:

Step 1 — Decode A's statement: “Your mother is my mother's daughter.” $\Rightarrow$ B's mother = A's mother's daughter.

Step 2 — Identify A's mother's daughter: A's mother's daughter = A's **sister** (assuming A refers to a sibling, not herself).

Step 3 — Determine B's relationship to A: B's mother = A's sister $\Rightarrow$ B is the **child of A's sister** = A's **nephew** (if B is male) or **niece** (if female). Since the options include Nephew, B is A's nephew.



Why other options are wrong:

- Option B (Son): B's mother would have to be A's wife for B to be A's son; here B's mother is A's sister.
- Option C (Brother): brothers share the same parents; B's parent is A's sister, not A's parent.
- Option D (Cousin): a cousin's parent is A's parent's sibling; here B's parent is A's own sibling.

Final Answer: B is A's Nephew $\Rightarrow$ A

Answer: (A) [Go Back to Q 33](#)

Q34.

Solution

Concept — Blood relation chain (daughter, mother, other parent):

Step 1 — Trace the chain:

- P is Q's daughter $\Rightarrow$ Q is P's parent (father or mother).
- R is P's mother $\Rightarrow$ R is P's mother.

Step 2 — Determine Q's identity: Since R is P's mother, Q (as P's other parent) must be P's **father** (assuming a standard family structure). Q is therefore R's **husband**.

Why other options are wrong:

- Option A (Son): Q is P's father; sons are one generation below their parents.
- Option B (Father): Q would have to be R's father-in-law or father; but Q is P's father and R's spouse.
- Option C (Brother): no sibling relationship between Q and R is established.

Final Answer: Q is R's Husband $\Rightarrow$ D

Answer: (D) [Go Back to Q 34](#)



Q35.

Solution**Concept — Direction path and net displacement:****Step 1 — Trace the path:**

- Walks 6 km North: from (0, 0) to (0, 6).
- Turns right (now facing East); walks 8 km East: from (0, 6) to (8, 6).
- Turns right (now facing South); walks 6 km South: from (8, 6) to (8, 0).

Step 2 — Net displacement: Net North-South: 6 km N – 6 km S = 0. Net East: 8 km.

$$\text{Distance from start} = \sqrt{0^2 + 8^2} = 8 \text{ km (due East).}$$

Why other options are wrong:

- Option A (6 km): only one leg of the journey.
- Option B (12 km): sum of North and East legs; not a straight-line distance.
- Option D (10 km): would be the answer if the South leg were absent ($\sqrt{6^2 + 8^2} = 10$).

Final Answer: Distance = 8 km $\Rightarrow$ **C****Answer: (C)** [Go Back to Q 35](#)

Q36.

Solution**Concept — Direction after sequential left turns:****Step 1 — Apply each turn:**

- Initial direction: **North**.
- After 1st left turn: North $\rightarrow$ **West**.
- After 2nd left turn: West $\rightarrow$ **South**.

Step 2 — Final direction: South.**Why other options are wrong:**

- Option A (North): starting direction; no turns applied.
- Option C (East): would result from two right turns, not two left turns.



- Option D (West): would result from only one left turn.

Final Answer: Final direction = South $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 36](#)

Q37.

Solution

Concept — Dice net folding to identify opposite faces:

Step 1 — Read the net layout: The cross-shaped net has: face **1** at the centre, face **2** above it, face **3** to its left, face **4** to its right, face **5** below it, face **6** below face 5.

Step 2 — Fold the net:

- Face 1 (centre) $\rightarrow$ **front** face.
- Face 2 (above 1) $\rightarrow$ folds up $\rightarrow$ **top**.
- Face 3 (left of 1) $\rightarrow$ folds left $\rightarrow$ **left**.
- Face 4 (right of 1) $\rightarrow$ folds right $\rightarrow$ **right**.
- Face 5 (below 1) $\rightarrow$ folds down $\rightarrow$ **bottom**.
- Face 6 (below 5) $\rightarrow$ folds past the bottom and wraps around $\rightarrow$ **back** face (opposite to front).

Opposite pairs: $1 \leftrightarrow 6$, $2 \leftrightarrow 5$, $3 \leftrightarrow 4$.

Why other options are wrong:

- Option B (2): face 2 is opposite face 5, not face 6.
- Option C (3): face 3 is opposite face 4.
- Option D (4): face 4 is opposite face 3.

Final Answer: Face opposite to 6 = 1 $\Rightarrow$ **A**

Answer: (A) [Go Back to Q 37](#)



Q38.

Solution**Concept — Figure matrix with two rules (shape by row, count by column):****Step 1 — Identify column pattern (count):**

- Column 1: every cell has **1** figure.
- Column 2: every cell has **2** figures.
- Column 3: every cell has **3** figures.

Step 2 — Identify row pattern (shape):

- Row 1: squares ($\square$). Row 2: triangles ($\triangle$). Row 3: circles ($\circ$).

Step 3 — Missing cell (Row 3, Column 3): Shape = circle; count = 3 $\Rightarrow$ **three circles** ($\circ \circ \circ$).**Why other options are wrong:**

- Option B ($\triangle \triangle$): wrong shape (triangles belong to Row 2) and wrong count.
- Option C ($\square$): wrong shape (squares belong to Row 1) and wrong count.
- Option D ($\square \square \square$): wrong shape (squares belong to Row 1).

Final Answer: $\circ \circ \circ$ (three circles) $\Rightarrow$ **A****Answer: (A)** [Go Back to Q 38](#)

Q39.

Solution**Concept — Water image (reflection about a horizontal axis):** A water image is the reflection of a figure in a horizontal mirror placed below it. The left-right orientation is preserved, but up and down are swapped.**Step 1 — Analyse the original figure:** A right-pointing arrow ($\rightarrow$) with a dot ($\bullet$) placed **above** the arrow.**Step 2 — Apply the vertical flip:**

- The arrow is horizontal; flipping about a horizontal axis leaves its direction **unchanged** ($\rightarrow$ stays $\rightarrow$).
- The dot, which was **above** the arrow, moves to **below** the arrow after the flip.



Water image: $\rightarrow$ with $\bullet$ below.

Why other options are wrong:

- Option A ($\leftarrow$ with $\bullet$ above): a left-right reflection (mirror image), not a water image.
- Option C ($\rightarrow$ with $\bullet$ above): identical to the original figure; no reflection applied.
- Option D ($\leftarrow$ with $\bullet$ below): combines both reflections; not a pure water image.

Final Answer: $\rightarrow$ with $\bullet$ below $\Rightarrow$ B

Answer: (B) [Go Back to Q 39](#)

Q40.

Solution

Concept — Number grid with pattern n, n^2, n^3 per row:

Step 1 — Identify row pattern:

- Row 1: 2, 4, 8 $\Rightarrow 2, 2^2, 2^3 \checkmark$
- Row 2: 3, 9, 27 $\Rightarrow 3, 3^2, 3^3 \checkmark$
- Row 3: 4, 16, ? $\Rightarrow 4, 4^2 = 16, 4^3 = ?$

Step 2 — Find the missing value:

$$4^3 = 4 \times 4 \times 4 = 64$$

Why other options are wrong:

- Option A (48): 4×12 ; not 4^3 .
- Option B (32): 4×8 ; not 4^3 .
- Option C (36): 6^2 ; not 4^3 .

Final Answer: $4^3 = 64 \Rightarrow$ D

Answer: (D) [Go Back to Q 40](#)



Answer Key

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

