

MAH BEd CET — Mental Ability

Sample Paper – 6

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, 7, 11, 16, ____

- (A) 20
- (B) 21
- (C) 22
- (D) 23

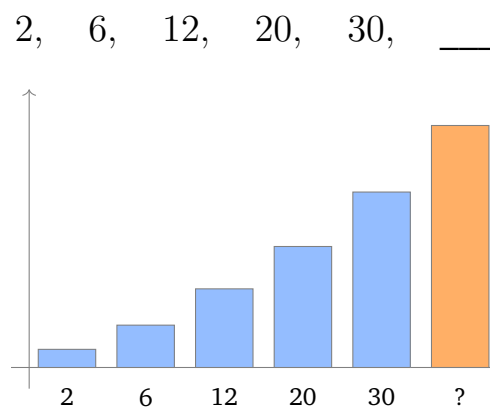
Q2. Find the missing term in the series:

3, 8, 16, 21, 42, 47, ____

- (A) 94
- (B) 92
- (C) 96
- (D) 88



Q3. Find the missing term in the series:



- (A) 36
- (B) 42
- (C) 40
- (D) 48

Q4. Find the missing letter in the series:

Z, X, V, T, R, ____

- (A) S
- (B) Q
- (C) O
- (D) P

Q5. Find the missing term in the series:

1, 3, 6, 10, 15, 21, ____

- (A) 25
- (B) 26
- (C) 28
- (D) 30

Q6. Find the missing letter in the series:

A, F, K, P, ____



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

Q7. Find the next term in the series:

3, 5, 9, 17, 33, ____

- (A) 60
- (B) 65
- (C) 63
- (D) 67

Q8. Choose the word that best completes the analogy:

Tagore : Gitanjali :: Premchand : ____

- (A) Ramayana
- (B) Mahabharata
- (C) Devdas
- (D) Godan

Q9. Choose the word that best completes the analogy:

Cotton : Cloth :: Leather : ____

- (A) Paper
- (B) Thread
- (C) Shoes
- (D) Wool

Q10. Choose the number that best completes the analogy:

36 : 6 :: 81 : ____

- (A) 9
- (B) 8



- (C) 7
- (D) 10

Q11. Choose the word that best completes the analogy:

Lawyer : Court :: Pilot : ____

- (A) Airport
- (B) Hangar
- (C) Terminal
- (D) Cockpit

Q12. Choose the word that best completes the analogy:

Forest : Tree :: Galaxy : ____

- (A) Planet
- (B) Star
- (C) Meteor
- (D) Comet

Q13. Choose the word that best completes the analogy:

Happy : Joyful :: Sad : ____

- (A) Glad
- (B) Excited
- (C) Sorrowful
- (D) Angry

Q14. Choose the word that best completes the analogy:

Weaving : Cloth :: Knitting : ____

- (A) Cotton
- (B) Yarn
- (C) Fabric
- (D) Sweater



- Q15.** If BIRD is coded as GNWI (each letter shifted +5), then FISH is coded as _____
- (A) KNXM
(B) LMYN
(C) KNMX
(D) JMWL
- Q16.** If MANGO is coded as NBOIP (each letter shifted +1), then GRAPE is coded as _____
- (A) HRBQF
(B) HSBQF
(C) GSBQF
(D) HSBRF
- Q17.** Using the mirror-alphabet rule ($A \leftrightarrow Z$, $B \leftrightarrow Y$, $C \leftrightarrow X$, ...), MIND is coded as _____
- (A) MRMW
(B) NRWM
(C) MRNW
(D) NRMW
- Q18.** If NOON is coded as NO (keeping only the first occurrence of each letter in order), then PEPPER is coded as _____
- (A) PER
(B) PPR
(C) PEP
(D) PRE
- Q19.** If only the letters at positions 1, 3, and 5 are retained (in order), what is obtained from the word MONDAY?
- (A) MON



- (B) DAY
- (C) MNA
- (D) ODA

Q20. If HELP is coded as DAHL (each letter shifted -4), then WORK is coded as _____

- (A) RJMF
- (B) SKNG
- (C) SJMG
- (D) TLOG

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

Earth Mars Venus Moon

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

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

Square Rectangle Triangle Rhombus

- (A) Triangle
- (B) Square
- (C) Rectangle
- (D) Rhombus

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

Gold Silver Salt Copper

- (A) Gold
- (B) Silver
- (C) Salt
- (D) Copper



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

2, 3, 9, 5, 7

- (A) 2
- (B) 9
- (C) 5
- (D) 7

Q25. Which one does **NOT** belong to the same group?

Ballet Bharatanatyam Kathak Odissi

- (A) Ballet
- (B) Bharatanatyam
- (C) Kathak
- (D) Odissi

Q26. Which one does **NOT** belong to the group of greenhouse gases?

CO₂ CH₄ N₂ H₂O

- (A) CO₂
- (B) CH₄
- (C) N₂
- (D) H₂O

Q27. Statements:

(1) No book is a magazine. (2) Some magazines are interesting.

Conclusions:

I. Some interesting things are books. II. Some interesting things are not books.

Which conclusion(s) follow?



- (A) Only I



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

Q28. Statements:

(1) Some apples are red. (2) Some red things are ripe.

Conclusions:

I. Some apples are ripe. II. All ripe things are red.

Which conclusion(s) follow?

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

Q29. Statements:

(1) All sparrows are birds. (2) All birds have beaks.

Conclusions:

I. All sparrows have beaks. II. All beaks belong to sparrows.

Which conclusion(s) follow?

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

Q30. Statements:

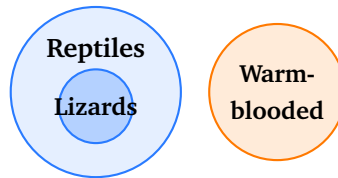
(1) No reptile is warm-blooded. (2) All lizards are reptiles.

Conclusions:

I. No lizard is warm-blooded. II. Some reptiles are lizards.

Which conclusion(s) follow?





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

Q31. Statements:

(1) Some dancers are singers. (2) All singers practice daily.

Conclusions:

I. All dancers practice daily. II. Some dancers practice daily.

Which conclusion(s) follow?

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

Q32. P is Q's brother. Q is R's daughter. How is P related to R?

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

Q33. A is B's father. B is C's sister. How is A related to C?

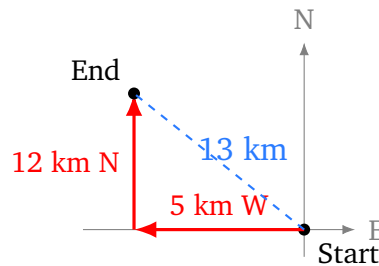
- (A) Uncle
- (B) Grandfather
- (C) Brother
- (D) Father

Q34. X's mother is Y's daughter. How is Y related to X?



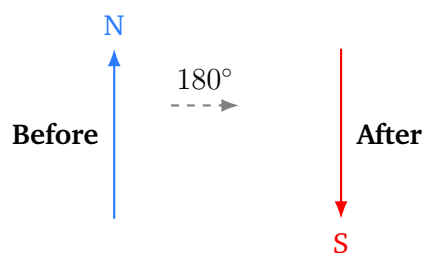
- (A) Mother
- (B) Grandmother
- (C) Aunt
- (D) Sister

Q35. A girl starts at a point and walks **5 km West**, then turns and walks **12 km North**. What is her straight-line distance from the starting point?



- (A) 10 km
- (B) 11 km
- (C) 13 km
- (D) 15 km

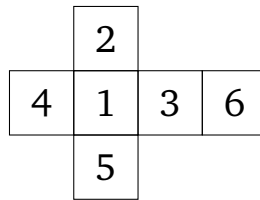
Q36. Rahul is initially facing **North**. He turns **180°** clockwise. Which direction is he now facing?



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

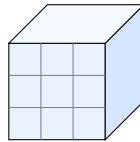
Q37. The net below is folded to form a cube. Which face is **opposite** to face 1?





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

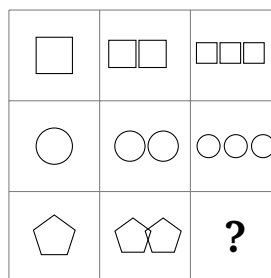
Q38. A $3 \times 3 \times 3$ cube is painted red on all six faces and then cut into 27 equal smaller cubes. How many smaller cubes have **exactly 2 faces** painted?



$3 \times 3 \times 3$ cube painted on all faces

- (A) 6
- (B) 12
- (C) 8
- (D) 24

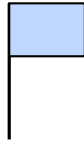
Q39. Study the 3×3 figure matrix. What should replace the **question mark**?



- (A) 1 pentagon
- (B) 2 circles
- (C) 3 squares
- (D) 3 pentagons



- Q40.** The figure below shows a flag shape (vertical pole on the left, flag cloth extending to the right). Which option shows its **left-right mirror image**?



(Original)

- (A)  (same as original)
- (B)  (rotated 90° clockwise)
- (C)  (pole on right, flag on left)
- (D)  (flag at bottom, pole on left)



Detailed Solutions**Q1.****Solution**

Concept — Progressive-difference series: The gap between consecutive terms increases by 1 each time.

Step 1 — Find the differences: $2 - 1 = 1$, $4 - 2 = 2$, $7 - 4 = 3$, $11 - 7 = 4$, $16 - 11 = 5$. The gaps are 1, 2, 3, 4, 5, ... (each increases by 1).

Step 2 — Apply next gap: Next gap = 6, so missing term = $16 + 6 = 22$.

Why other options are wrong:

- Option A (20): gap would be 4, repeating an earlier gap.
- Option B (21): gap would be 5, repeating the previous gap.
- Option D (23): gap would be 7, skipping gap 6.

Final Answer: $16 + 6 = 22 \Rightarrow$ C

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

Q2.**Solution**

Concept — Alternating-operation series (+5 then $\times 2$): Two operations alternate: add 5, then multiply by 2.

Step 1 — Verify the pattern:

- $3 + 5 = 8 \checkmark$ $8 \times 2 = 16 \checkmark$ $16 + 5 = 21 \checkmark$ $21 \times 2 = 42 \checkmark$ $42 + 5 = 47 \checkmark$

Step 2 — Apply next operation: After +5 (which gave 47), next operation is $\times 2$: $47 \times 2 = 94$.

Why other options are wrong:

- Option B (92): $47 \times 2 = 94 \neq 92$.
- Option C (96): $47 \times 2 = 94 \neq 96$.
- Option D (88): no basis for this value.

Final Answer: $47 \times 2 = 94 \Rightarrow$ A

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



Q3.

Solution

Concept — Product-of-consecutive-integers series: The n -th term equals $n \times (n + 1)$.

Step 1 — Verify the rule: $1 \times 2 = 2$, $2 \times 3 = 6$, $3 \times 4 = 12$, $4 \times 5 = 20$, $5 \times 6 = 30$. Each term is $n(n + 1)$.

Step 2 — Find next term: $n = 6$: $6 \times 7 = 42$.

Why other options are wrong:

- Option A (36): $6 \times 6 = 36$, uses same factor twice.
- Option C (40): not of the form $n(n + 1)$.
- Option D (48): $6 \times 8 = 48$, skips one factor.

Final Answer: $6 \times 7 = 42 \Rightarrow$ B

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

Q4.

Solution

Concept — Every-other-letter descending series: Each term skips one letter going backwards in the alphabet (each letter decreases by 2 positions).

Step 1 — Verify positions: Z=26, X=24, V=22, T=20, R=18. Differences: $-2, -2, -2, -2$ (constant).

Step 2 — Next term: $18 - 2 = 16$, and the 16th letter is **P**.

Why other options are wrong:

- Option A (S=19): decreases by only 1 from R=18.
- Option B (Q=17): decreases by 1 from R, not 2.
- Option C (O=15): decreases by 3 from R=18.

Final Answer: $R(18) - 2 = 16 = P \Rightarrow$ D

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



Q5.

Solution

Concept — Triangular-number series: The n -th triangular number is $T_n = \frac{n(n+1)}{2}$.

Step 1 — Verify: $T_1 = 1, T_2 = 3, T_3 = 6, T_4 = 10, T_5 = 15, T_6 = 21$. Differences: 2, 3, 4, 5, 6, ... (increase by 1 each time).

Step 2 — Next term: $T_7 = \frac{7 \times 8}{2} = 28$. Alternatively, $21 + 7 = 28$.

Why other options are wrong:

- Option A (25): $21 + 4$, wrong difference.
- Option B (26): $21 + 5$, wrong difference.
- Option D (30): $21 + 9$, skips gap.

Final Answer: $T_7 = 28 \Rightarrow \boxed{\text{C}}$

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

Q6.

Solution

Concept — Every-5th-letter forward series: Each letter advances by 5 positions in the alphabet.

Step 1 — Verify positions: A=1, F=6, K=11, P=16. Differences: +5, +5, +5 (constant).

Step 2 — Next term: $16 + 5 = 21$, and the 21st letter is U.

Why other options are wrong:

- Option B (T=20): $16 + 4$, wrong gap.
- Option C (V=22): $16 + 6$, wrong gap.
- Option D (W=23): $16 + 7$, wrong gap.

Final Answer: $P(16) + 5 = 21 = \text{U} \Rightarrow \boxed{\text{A}}$

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



Q7.

Solution

Concept — $2^n + 1$ series: Each term equals $2^n + 1$ for $n = 1, 2, 3, \dots$

Step 1 — Verify the rule:

$$\bullet \quad 2^1 + 1 = 3 \checkmark \quad 2^2 + 1 = 5 \checkmark \quad 2^3 + 1 = 9 \checkmark \quad 2^4 + 1 = 17 \checkmark \quad 2^5 + 1 = 33 \checkmark$$

Step 2 — Next term: $n = 6$: $2^6 + 1 = 64 + 1 = 65$.

Why other options are wrong:

- Option A (60): $2^6 = 64 \neq 60 - 1$.
- Option C (63): $2^6 - 1 = 63$, uses subtraction instead of addition.
- Option D (67): $2^6 + 3 = 67$, no basis for $+3$.

Final Answer: $2^6 + 1 = 65 \Rightarrow \boxed{B}$

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

Q8.

Solution

Concept — Author:Famous-Work analogy: Each author is paired with their most celebrated literary work.

Step 1 — Identify the relationship: Rabindranath Tagore wrote *Gitanjali* (awarded the Nobel Prize in Literature, 1913). Similarly, Munshi Premchand wrote *Godan* (his masterpiece Hindi novel depicting agrarian society).

Why other options are wrong:

- Option A (Ramayana): written by Valmiki (Sanskrit), not Premchand.
- Option B (Mahabharata): attributed to Vyasa, not Premchand.
- Option C (Devdas): a novel by Sarat Chandra Chattopadhyay, not Premchand.

Final Answer: Premchand $\rightarrow$ Godan $\Rightarrow \boxed{D}$

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



Q9.

Solution

Concept — Raw Material:Product analogy: The analogy links a raw material to the finished product made from it.

Step 1 — Identify the relationship: Cotton (raw material) → Cloth (woven product). Leather (raw material) → Shoes (a primary product made from leather).

Why other options are wrong:

- Option A (Paper): paper is made from wood pulp, not leather.
- Option B (Thread): thread is made from cotton/silk, not leather.
- Option D (Wool): wool is a raw material itself, obtained from sheep.

Final Answer: Leather → Shoes ⇒

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

Q10.

Solution

Concept — Number:Square-Root analogy: Each number is paired with its positive square root.

Step 1 — Verify: $\sqrt{36} = 6$ ✓ (since $6^2 = 36$).

Step 2 — Apply to 81: $\sqrt{81} = 9$ (since $9^2 = 81$).

Why other options are wrong:

- Option B (8): $8^2 = 64 \neq 81$.
- Option C (7): $7^2 = 49 \neq 81$.
- Option D (10): $10^2 = 100 \neq 81$.

Final Answer: $\sqrt{81} = 9$ ⇒

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



Q11.

Solution

Concept — Profession:Primary-Workplace analogy: Each professional is matched to the specific place where they primarily perform their work.

Step 1 — Identify relationship: A Lawyer argues cases in a Court (courtroom). A Pilot flies the aircraft from the Cockpit (the flight deck, where all controls are located).

Why other options are wrong:

- Option A (Airport): the airport is the broader facility; a pilot works from the cockpit, not the airport terminal.
- Option B (Hangar): a hangar is where aircraft are stored/maintained, not where a pilot operates.
- Option C (Terminal): where passengers board; not the pilot's workstation.

Final Answer: Pilot → Cockpit ⇒ D

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

Q12.

Solution

Concept — Whole:Constituent-Unit analogy: The analogy links a large collection to its fundamental building block.

Step 1 — Identify relationship: A Forest is made up of Trees (trees are the primary units of a forest). A Galaxy is made up of Stars (stars are the primary luminous constituents of a galaxy, numbering in billions).

Why other options are wrong:

- Option A (Planet): planets orbit stars but are not the primary constituents of a galaxy.
- Option C (Meteor): a meteor is a small rocky body; not a constituent unit of a galaxy.
- Option D (Comet): comets are small icy bodies; not the defining unit of a galaxy.

Final Answer: Galaxy → Star ⇒ B

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



Q13.

Solution

Concept — Synonym-pair analogy: Both pairs share a synonymous relationship (same or very similar meaning).

Step 1 — Identify relationship: Happy ↔ Joyful (synonyms, both express a state of happiness). Sad ↔ Sorrowful (synonyms, both express a state of grief or unhappiness).

Why other options are wrong:

- Option A (Glad): glad means happy/pleased, which is the opposite of sad.
- Option B (Excited): denotes enthusiasm, not sadness.
- Option D (Angry): denotes anger, not sadness.

Final Answer: Sad ↔ Sorrowful ⇒ C

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

Q14.

Solution

Concept — Craft-Process:Final-Product analogy: The analogy links a textile craft to the finished item produced by it.

Step 1 — Identify relationship: Weaving → Cloth (weaving interlaces threads on a loom to produce cloth/fabric). Knitting → Sweater (knitting uses needles and yarn to produce garments such as sweaters, socks, etc.).

Why other options are wrong:

- Option A (Cotton): cotton is a raw material, not a knitted product.
- Option B (Yarn): yarn is the input material for knitting, not the output.
- Option C (Fabric): fabric/cloth is the output of weaving, not knitting specifically.

Final Answer: Knitting → Sweater ⇒ D

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



Q15.

Solution

Concept — Letter-shift coding (+5): Each letter is replaced by the letter 5 positions ahead in the alphabet.

Step 1 — Verify with BIRD: $B(2)+5=G(7)$, $I(9)+5=N(14)$, $R(18)+5=W(23)$, $D(4)+5=I(9) \Rightarrow GNWI \checkmark$

Step 2 — Apply to FISH: $F(6)+5=K(11)$, $I(9)+5=N(14)$, $S(19)+5=X(24)$, $H(8)+5=M(13) \Rightarrow KNXM$

Why other options are wrong:

- Option B (LMYN): $L=12$, but $F+5=K(11)$; also wrong order.
- Option C (KNMX): M and X are swapped; $S+5=X$, $H+5=M$, so order is X then M.
- Option D (JMWL): $J=10$, but $F+5=K(11)$.

Final Answer: FISH $\rightarrow$ KNXM $\Rightarrow$ A

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

Q16.

Solution

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

Step 1 — Verify with MANGO: $M(13)+1=N$, $A(1)+1=B$, $N(14)+1=O$, $G(7)+1=H$, $O(15)+1=P \Rightarrow NBOIP \checkmark$

Step 2 — Apply to GRAPE: $G(7)+1=H(8)$, $R(18)+1=S(19)$, $A(1)+1=B(2)$, $P(16)+1=Q(17)$, $E(5)+1=F(6) \Rightarrow HSBQF$

Why other options are wrong:

- Option A (HRBQF): R is wrong; $G+1=H$ but $R+1=S$, not R.
- Option C (GSBQF): G is wrong; $G+1=H$, not G (no shift applied).
- Option D (HSBRF): R is wrong in 5th position; $E+1=F$, not R.

Final Answer: GRAPE $\rightarrow$ HSBQF $\Rightarrow$ B

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



Q17.

Solution

Concept — Mirror-alphabet coding: The letter at position p maps to the letter at position $27 - p$ (so $A \leftrightarrow Z$, $B \leftrightarrow Y$, ..., $M \leftrightarrow N$).

Step 1 — Apply to MIND:

- $M = 13 \rightarrow 27 - 13 = 14 = N$
- $I = 9 \rightarrow 27 - 9 = 18 = R$
- $N = 14 \rightarrow 27 - 14 = 13 = M$
- $D = 4 \rightarrow 27 - 4 = 23 = W$

MIND $\rightarrow$ NRMW

Why other options are wrong:

- Option A (MRMW): M wrong in 1st position; $M(13) \rightarrow N(14)$, not M.
- Option B (NRWM): W and M are swapped; correct order is NRMW.
- Option C (MRNW): M wrong in 1st position and N/W swapped.

Final Answer: MIND $\rightarrow$ NRMW $\Rightarrow$ D

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

Q18.

Solution

Concept — Unique-first-occurrence coding: Scan the word left to right; keep a letter only the first time it appears; discard all subsequent repetitions.

Step 1 — Verify with NOON: N (keep), O (keep), O (duplicate $\rightarrow$ skip), N (duplicate $\rightarrow$ skip) $\Rightarrow$ NO ✓

Step 2 — Apply to PEPPER: P (keep), E (keep), P (duplicate $\rightarrow$ skip), P (duplicate $\rightarrow$ skip), E (duplicate $\rightarrow$ skip), R (keep) $\Rightarrow$ PER

Why other options are wrong:

- Option B (PPR): includes repeated P, which should be skipped.
- Option C (PEP): includes second P, which is a duplicate.
- Option D (PRE): wrong order; E appears before R in PEPPER.

Final Answer: PEPPER $\rightarrow$ PER $\Rightarrow$ A

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



Q19.

Solution

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

Step 1 — Map MONDAY:

Pos 1	Pos 2	Pos 3	Pos 4	Pos 5	Pos 6
M	O	N	D	A	Y

Step 2 — Keep odd positions (1, 3, 5): M, N, A $\Rightarrow$ MNA

Why other options are wrong:

- Option A (MON): M(1), O(2), N(3) — includes even position 2.
- Option B (DAY): D(4), A(5), Y(6) — takes last three letters, not odd positions.
- Option D (ODA): O(2), D(4), A(5) — takes even positions 2 and 4.

Final Answer: MONDAY $\rightarrow$ MNA $\Rightarrow$ C

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

Q20.

Solution

Concept — Letter-shift coding (−4): Each letter is replaced by the letter 4 positions earlier in the alphabet.

Step 1 — Verify with HELP: H(8)−4=D(4), E(5)−4=A(1), L(12)−4=H(8), P(16)−4=L(12) $\Rightarrow$ DAHL ✓

Step 2 — Apply to WORK: W(23)−4=S(19), O(15)−4=K(11), R(18)−4=N(14), K(11)−4=G(7) $\Rightarrow$ SKNG

Why other options are wrong:

- Option A (RJMF): R=18, but W−4=S(19), not R.
- Option C (SJMG): J=10, but O−4=K(11), not J.
- Option D (TLOG): T=20, but W−4=S(19), not T.

Final Answer: WORK $\rightarrow$ SKNG $\Rightarrow$ B

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



Q21.

Solution**Concept — Classification by celestial-body type:****Step 1 — Categorise each body:**

- Earth, Mars, Venus → **planets** of the Solar System (orbit the Sun directly).
- Moon → Earth's **natural satellite** (orbits Earth, not the Sun directly).

Moon is the only non-planet among the four.

Why other options are wrong:

- Option A (Earth): a planet; belongs with the group.
- Option B (Mars): a planet; belongs with the group.
- Option C (Venus): a planet; belongs with the group.

Final Answer: Moon (natural satellite, not a planet) ⇒ DAnswer: (D) [Go Back to Q 21](#)

Q22.

Solution**Concept — Classification by number of sides (polygon type):****Step 1 — Count sides:**

- Square, Rectangle, Rhombus → **quadrilaterals** (4 sides each).
- Triangle → **3 sides** (not a quadrilateral).

Why other options are wrong:

- Option B (Square): quadrilateral; belongs.
- Option C (Rectangle): quadrilateral; belongs.
- Option D (Rhombus): quadrilateral; belongs.

Final Answer: Triangle (3-sided polygon, not a quadrilateral) ⇒ AAnswer: (A) [Go Back to Q 22](#)

Q23.

Solution

Concept — Classification by material type (metals vs. non-metal compounds):

Step 1 — Categorise:

- Gold, Silver, Copper → **metals** (elements with metallic properties: lustre, conductivity, malleability).
- Salt (NaCl) → an **ionic compound** made of sodium and chlorine; it is not a metal.

Why other options are wrong:

- Option A (Gold): a metal (Au); belongs.
- Option B (Silver): a metal (Ag); belongs.
- Option D (Copper): a metal (Cu); belongs.

Final Answer: Salt (ionic compound, not a metal) ⇒ **C**

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

Q24.

Solution

Concept — Classification by number type (prime vs. composite):

Step 1 — Check each number:

- 2 = prime (divisors: 1 and 2 only).
- 3 = prime (divisors: 1 and 3 only).
- 5 = prime (divisors: 1 and 5 only).
- 7 = prime (divisors: 1 and 7 only).
- $9 = 3 \times 3 =$ **composite** (has divisor 3 besides 1 and 9).

Why other options are wrong:

- Option A (2): smallest prime; belongs.
- Option C (5): prime; belongs.
- Option D (7): prime; belongs.

Final Answer: 9 is the only composite number ⇒ **B**

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



Q25.

Solution**Concept — Classification by origin of classical dance form:****Step 1 — Categorise:**

- Bharatanatyam (Tamil Nadu), Kathak (North India), Odissi (Odisha) → **Indian classical dances** (listed by the Sangeet Natak Akademi).
- Ballet → a **Western** classical dance form that originated in Renaissance Italy and flourished in France and Russia.

Why other options are wrong:

- Option B (Bharatanatyam): Indian classical dance; belongs.
- Option C (Kathak): Indian classical dance; belongs.
- Option D (Odissi): Indian classical dance; belongs.

Final Answer: Ballet (Western dance, not Indian classical) ⇒ **A****Answer: (A)** [Go Back to Q 25](#)

Q26.

Solution**Concept — Classification by greenhouse-gas status:** A greenhouse gas absorbs and re-emits infrared radiation, trapping heat in the atmosphere.**Step 1 — Evaluate each:**

- CO₂ (carbon dioxide): major greenhouse gas. ✓
- CH₄ (methane): potent greenhouse gas (GWP $\approx 25 \times$ CO₂). ✓
- H₂O (water vapour): the most abundant greenhouse gas. ✓
- N₂ (diatomic nitrogen): constitutes $\sim 78\%$ of the atmosphere but is **NOT** a greenhouse gas — it does not absorb infrared radiation because it has no net dipole moment change during vibration.

Why other options are wrong:

- Option A (CO₂): a greenhouse gas; belongs.
- Option B (CH₄): a greenhouse gas; belongs.
- Option D (H₂O): a greenhouse gas; belongs.

Final Answer: N₂ is not a greenhouse gas ⇒ **C**

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

Q27.

Solution

Concept — Universal-Negative + Particular-Affirmative Syllogism:

Step 1 — Map the statements:

- S1: No book is a magazine $\Rightarrow$ Books $\cap$ Magazines = $\emptyset$ (completely disjoint).
- S2: Some magazines are interesting $\Rightarrow$ Magazines $\cap$ Interesting $\neq \emptyset$.

Step 2 — Test conclusions:

- **Conclusion I** (Some interesting things are books): The interesting things come from the Magazines $\cap$ Interesting overlap. Since Books and Magazines are disjoint, none of these interesting things can be books. **INVALID** $\times$
- **Conclusion II** (Some interesting things are not books): The Magazines $\cap$ Interesting portion contains things that are interesting; since Books $\cap$ Magazines = $\emptyset$, these interesting magazine-things are definitely not books. **VALID** $\checkmark$

Why other options are wrong:

- Option A (Only I): I does not follow.
- 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 27](#)

Q28.

Solution

Concept — Particular + Particular Syllogism gives no definite conclusion about the non-overlapping sets:

Step 1 — Map the statements:

- S1: Some apples are red $\Rightarrow$ Apples $\cap$ Red $\neq \emptyset$ (partial overlap).
- S2: Some red things are ripe $\Rightarrow$ Red $\cap$ Ripe $\neq \emptyset$ (partial overlap).



Step 2 — Test conclusions:

- **Conclusion I** (Some apples are ripe): The apples that are red may or may not be among the red things that are ripe — the overlap regions could be entirely different subsets of “Red.” Not guaranteed. **INVALID** ×
- **Conclusion II** (All ripe things are red): Far too sweeping; some ripe things could be yellow, green, etc. Not supported at all. **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 28](#)

Q29.

Solution

Concept — Universal Affirmative chain (Barbara form): If all $A \subseteq B$ and all $B \subseteq C$, then all $A \subseteq C$.

Step 1 — Map the statements:

- S1: All sparrows $\subseteq$ birds.
- S2: All birds $\subseteq$ things-with-beaks.

Step 2 — Test conclusions:

- **Conclusion I** (All sparrows have beaks): Sparrows $\subseteq$ Birds $\subseteq$ Things-with-beaks $\Rightarrow$ All sparrows have beaks. **VALID** ✓
- **Conclusion II** (All beaks belong to sparrows): This is the converse of S1 (not all beaked animals are sparrows — eagles, parrots, etc., also have beaks). **INVALID** ×

Why other options are wrong:

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



Final Answer: Only Conclusion I follows $\Rightarrow$ A

Answer: (A) [Go Back to Q 29](#)

Q30.

Solution

Concept — Universal Negative + Universal Affirmative chain:

Step 1 — Map the statements:

- S1: No reptile is warm-blooded $\Rightarrow$ Reptiles $\cap$ Warm-blooded $= \emptyset$.
- S2: All lizards $\subseteq$ reptiles.

Step 2 — Test conclusions:

- **Conclusion I** (No lizard is warm-blooded): Lizards $\subseteq$ Reptiles and Reptiles $\cap$ Warm $= \emptyset$, therefore Lizards $\cap$ Warm $= \emptyset$. **VALID** ✓
- **Conclusion II** (Some reptiles are lizards): Since Lizards $\subseteq$ Reptiles and the set of lizards is non-empty, there exist reptiles (namely, lizards) that are lizards. **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 I and II follow $\Rightarrow$ C

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

Q31.

Solution

Concept — Particular + Universal Affirmative Syllogism:

Step 1 — Map the statements:

- S1: Some dancers are singers $\Rightarrow$ Dancers $\cap$ Singers $\neq \emptyset$ (partial overlap).
- S2: All singers $\subseteq$ practice-daily.

Step 2 — Test conclusions:



- **Conclusion I** (All dancers practice daily): Only the dancers who are singers are guaranteed to practise daily; the remaining dancers (who are not singers) may or may not practise. **INVALID** ×
- **Conclusion II** (Some dancers practice daily): The dancers who are also singers $\subseteq$ Singers $\subseteq$ Practice-daily, so those dancers do practise daily. **VALID** ✓

Why other options are wrong:

- Option A (Only I): I does not follow.
- 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 tracing:

Step 1 — Trace the chain:

- P is Q's brother $\Rightarrow$ P and Q are siblings (same parents).
- Q is R's daughter $\Rightarrow$ R is Q's parent.
- Since P and Q share the same parents, R is also P's parent. As P is male (he is Q's *brother*), P is R's **son**.

Why other options are wrong:

- Option B (Nephew): nephew would be a sibling's son; P is R's own child, not a sibling's child.
- Option C (Grandson): that would require an extra generation (R's child's child); P is directly R's child.
- Option D (Brother): P and R are one generation apart; brother implies the same generation.

Final Answer: P is R's Son $\Rightarrow$ **A**

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



Q33.

Solution**Concept — Blood-relation chain tracing:****Step 1 — Trace the chain:**

- A is B's father $\Rightarrow$ A is B's parent.
- B is C's sister $\Rightarrow$ B and C are siblings with the same parents.
- Since A is B's parent and B and C share the same parents, A is also C's parent, i.e. A is C's **father**.

Why other options are wrong:

- Option A (Uncle): uncle is a parent's sibling; A is the direct parent of C.
- Option B (Grandfather): that would place A two generations above C; A is only one generation above.
- Option C (Brother): brother implies the same generation; A is C's parent.

Final Answer: A is C's Father $\Rightarrow$ DAnswer: (D) [Go Back to Q 33](#)

Q34.

Solution**Concept — Blood-relation chain tracing (maternal line):****Step 1 — Assign variables:** Let X's mother = *M*.**Step 2 — Trace:**

- *M* is Y's daughter $\Rightarrow$ Y is *M*'s parent.
- *M* is X's mother $\Rightarrow$ Y is X's maternal grandparent.
- Among the given options, the grandparent on the mother's side is the **Grand-mother** (Y is female, consistent with the option).

Why other options are wrong:

- Option A (Mother): Y is *M*'s parent, not X's mother; X's mother is *M*.
- Option C (Aunt): aunt is a parent's sibling; Y is a generation above *M*, not *M*'s sibling.
- Option D (Sister): sister implies the same generation as X; Y is two generations above X.



Final Answer: Y is X's Grandmother $\Rightarrow$ **B**

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

Q35.

Solution

Concept — Direction tracing with the Pythagoras theorem:

Step 1 — Trace the path:

- Walk 5 km West $\Rightarrow$ horizontal displacement = 5 km West.
- Turn and walk 12 km North $\Rightarrow$ vertical displacement = 12 km North.

The path forms a right-angled triangle with legs 5 km and 12 km.

Step 2 — Calculate straight-line distance:

$$d = \sqrt{5^2 + 12^2} = \sqrt{25 + 144} = \sqrt{169} = 13 \text{ km}$$

Why other options are wrong:

- Option A (10 km): $\sqrt{6^2 + 8^2} = 10$; that uses legs 6 and 8, not 5 and 12.
- Option B (11 km): $\sqrt{121} = 11$; no Pythagorean combination here.
- Option D (15 km): $\sqrt{225} = 15$; exceeds the actual distance.

Final Answer: $d = 13 \text{ km} \Rightarrow$ **C**

Answer: (C) [Go Back to Q 35](#)

Q36.

Solution

Concept — Direction after rotation: A 180° turn (clockwise or anticlockwise) reverses the facing direction completely.

Step 1 — Apply the turn:

- Initially facing **North**.
- A 180° clockwise turn: North $\rightarrow$ East (90°) $\rightarrow$ South (180°).
- Alternatively: 180° reversal of North = **South**.

Why other options are wrong:



- Option A (North): that would be a 360° (full) turn.
- Option B (East): that is a 90° clockwise turn only.
- Option C (West): that is a 90° anticlockwise turn only.

Final Answer: Facing South after 180° turn $\Rightarrow$ D

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

Q37.

Solution

Concept — Cube-net folding to identify opposite faces:

Step 1 — Read the net layout:

- Horizontal strip (left $\rightarrow$ right): 4, 1, 3, 6.
- Vertical arm above face 1: face 2.
- Vertical arm below face 1: face 5.

Step 2 — Fold and identify pairs:

- Face 1 (centre of horizontal strip) $\rightarrow$ **front** face.
- Face 6 (3rd to the right of centre, wraps to the back) $\rightarrow$ **back** face. **1 is opposite 6.**
- Face 4 (left of 1) $\rightarrow$ left face; Face 3 (right of 1) $\rightarrow$ right face. (3 opposite 4.)
- Face 2 (above 1) $\rightarrow$ top face; Face 5 (below 1) $\rightarrow$ bottom face. (2 opposite 5.)

Why other options are wrong:

- Option B (5): face 5 is opposite face 2, not face 1.
- Option C (4): face 4 is opposite face 3, not face 1.
- Option D (3): face 3 is opposite face 4, not face 1.

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

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



Q38.

Solution

Concept — Painted-cube analysis: When a $3 \times 3 \times 3$ cube is painted on all faces and cut into 27 small cubes, the number of painted faces on each small cube depends on its position.

Step 1 — Classify positions:

- **Corner** cubes (3 faces painted): 8 corners $\Rightarrow$ 8 cubes.
- **Edge** cubes (2 faces painted): 12 edges $\times$ 1 middle cube per edge = 12 cubes.
- **Face-centre** cubes (1 face painted): 6 faces $\times$ 1 centre cube = 6 cubes.
- **Inner** cube (0 faces painted): 1 cube.

Total: $8 + 12 + 6 + 1 = 27 \checkmark$

Step 2 — Answer: Cubes with **exactly 2** painted faces = edge cubes = 12.

Why other options are wrong:

- Option A (6): number of face-centre cubes (1 painted face).
- Option C (8): number of corner cubes (3 painted faces).
- Option D (24): no standard category gives 24.

Final Answer: 12 edge cubes have exactly 2 faces painted $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 38](#)

Q39.

Solution

Concept — Figure matrix: count increases left-to-right; shape changes top-to-bottom.

Step 1 — Identify the column pattern (count):

- Column 1: 1 shape in every row.
- Column 2: 2 shapes in every row.
- Column 3: 3 shapes in every row.

Step 2 — Identify the row pattern (shape):

- Row 1: squares ($\square$).



- Row 2: circles (○).
- Row 3: pentagons.

Step 3 — Missing cell: Row 3, Column 3 $\Rightarrow$ **3 pentagons.**

Why other options are wrong:

- Option A (1 pentagon): count should be 3 for Column 3.
- Option B (2 circles): wrong shape (Row 3 uses pentagons) and wrong count.
- Option C (3 squares): wrong shape; Row 3 uses pentagons, not squares.

Final Answer: 3 pentagons $\Rightarrow$ **D**

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

Q40.

Solution

Concept — Mirror image (left-right reflection): A left-right flip swaps the left and right sides of the figure while keeping top and bottom unchanged.

Step 1 — Analyse the original: The original has the **pole on the left** (vertical line at the left edge) and the **flag cloth extending to the right** from the top of the pole.

Step 2 — Apply left-right reflection: After flipping, what was on the left goes to the right:

- Pole moves from the left side to the **right side**.
- Flag cloth, previously extending rightward, now extends **leftward** from the pole.

This matches **Option C** (pole on right, flag cloth on left).

Why other options are wrong:

- Option A: identical to the original — no reflection applied.
- Option B: a 90° clockwise rotation, not a mirror image.
- Option D: flag placed at the bottom — this is an upside-down flip, not a left-right mirror.

Final Answer: Option C is the left-right mirror image $\Rightarrow$ **C**

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



Answer Key

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

