MAH BEd CET — Mental Ability

Sample Paper – 4

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:

$$10, \quad 11, \quad 13, \quad 16, \quad 20, \quad \_\_\_$$

(A) 23
(B) 24
(C) 25
(D) 26

Q2. Find the missing letter in the series:

$$B, \quad D, \quad H, \quad N, \quad V, \quad \_\_\_$$

(A) G
(B) E
(C) H
(D) F

Q3. Find the missing term in the series:

$$\frac{2}{3}, \quad \frac{4}{6}, \quad \frac{6}{9}, \quad \frac{8}{12}, \quad \text{\_\_\_}$$

(A) $\frac{10}{15}$
(B) $\frac{10}{12}$
(C) $\frac{8}{15}$
(D) $\frac{12}{15}$

Q4. Find the missing term in the series:

$$17, \quad 14, \quad 18, \quad 15, \quad 19, \quad 16, \quad 20, \quad \text{\_\_\_}$$

(A) 18
(B) 17
(C) 21
(D) 16

Q5. Find the next term in the series:

$$2, \quad 6, \quad 18, \quad 54, \quad 162, \quad \text{\_\_\_}$$

(A) 324
(B) 378
(C) 486
(D) 540

Q6. Find the missing term in the series:

$$100, \quad 91, \quad 82, \quad 73, \quad 64, \quad \text{\_\_\_}$$

(A) 58
(B) 57
(C) 56
(D) 55

Q7. Find the next term in the series:

$$1, \quad 3, \quad 4, \quad 7, \quad 11, \quad 18, \quad \_\_\_$$

(A) 29
(B) 27
(C) 30
(D) 25

Q8. Choose the word that best completes the analogy:

Telescope : Stars :: Microscope : ____

(A) Telescope
(B) Bacteria
(C) Stars
(D) Lens

Q9. Choose the word that best completes the analogy:

Hot : Boiling :: Cold : ____

(A) Chilly
(B) Icy
(C) Freezing
(D) Cool

Q10. Choose the number that best completes the analogy:

6 : 216 :: 7 : ____

(A) 294
(B) 300
(C) 336
(D) 343

Q11. Choose the word that best completes the analogy:

Football : Ground :: Tennis : ____

(A) Court
(B) Field
(C) Ring
(D) Stadium

Q12. Choose the word that best completes the analogy:

Flower : Petal :: Fruit : ____

(A) Pulp
(B) Seed
(C) Skin
(D) Core

Q13. Choose the word that best completes the analogy:

Up : Down :: Left : ____

(A) Middle
(B) Side
(C) Right
(D) Back

Q14. Choose the unit that best completes the analogy:

Speed : km/h :: Power : ____

(A) Joule
(B) Newton
(C) Pascal
(D) Watt

Q15. If `LION` is coded as `SPVU` (each letter shifted $+7$), then `BEAR` is coded as ____

(A) ILHY
(B) IMHY
(C) ILGY

(D) IKHY

Q16. If FACE is coded as CAFE (1st and 3rd letters swapped), then LAMP is coded as ____

(A) DOWR
(B) MALP
(C) DROW
(D) WROD

Q17. Using the mirror-alphabet rule ($A \leftrightarrow Z,\ B \leftrightarrow Y,\ C \leftrightarrow X,\ \ldots$), GOLD is coded as ____

(A) TLWP
(B) TMOW
(C) TLOW
(D) SLOW

Q18. If MEAN is coded as NFBO (each letter shifted $+1$), then BACK is coded as ____

(A) ABCK
(B) BCDK
(C) CBDM
(D) CBDL

Q19. If only consonants are retained (all vowels removed), TIGER becomes ____

(A) TGR
(B) TGRE
(C) TGE
(D) TR

Q20. If LAMP is coded as MALP (1st and 3rd letters swapped), then FIRE is coded as ____

(A) EFIR
(B) RIFE
(C) FIER
(D) IRFE

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

Car Bus Bicycle Ship

(A) Car
(B) Bus
(C) Ship
(D) Bicycle

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

$$8, \quad 27, \quad 64, \quad 100, \quad 125$$

(A) 8
(B) 27
(C) 64
(D) 100

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

Novel Poem Drama Essay Symphony

(A) Symphony
(B) Novel
(C) Drama
(D) Essay

Q24. Which crop does **NOT** belong to the same category?

Wheat Mustard Sunflower Groundnut

(A) Mustard
(B) Wheat

(C) Sunflower
(D) Groundnut

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

Ganga Brahmaputra Indus Cauvery

(A) Ganga
(B) Indus
(C) Cauvery
(D) Brahmaputra

Q26. Which season does **NOT** belong to the recognized Indian meteorological seasons?

Summer Winter Monsoon Autumn

(A) Summer
(B) Monsoon
(C) Winter
(D) Autumn

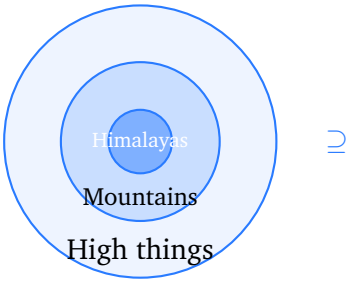
Q27. **Statements:**

(1) All mountains are high. (2) Himalayas are mountains.

Conclusions:

I. Himalayas are high. II. All high things are mountains.

Which conclusion(s) follow?



(A) Only I
(B) Only II
(C) Both I and II

(D) Neither

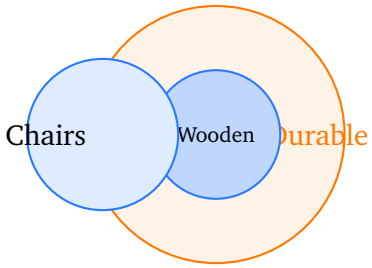
Q28. Statements:

(1) Some chairs are wooden. (2) All wooden things are durable.

Conclusions:

I. All chairs are durable. II. Some chairs are durable.

Which conclusion(s) follow?



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

Q29. Statements:

(1) All scientists are intelligent. (2) No intelligent person fails.

Conclusions:

I. No scientist fails. II. Some who do not fail are scientists.

Which conclusion(s) follow?

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

Q30. Statements:

(1) Some poets are singers. (2) Some singers are actors.

Conclusions:

I. Some poets are actors. II. All actors are poets.

Which conclusion(s) follow?

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

Q31. **Statements:**
(1) All planets revolve around stars. (2) Earth is a planet.

Conclusions:
I. Earth revolves around a star. II. All things revolving around stars are planets.

Which conclusion(s) follow?

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

Q32. Akash's father's brother's son is Ravi. What is Ravi's relationship to Akash?

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

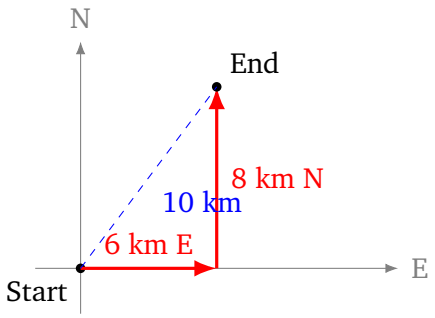
Q33. P is Q's daughter. Q is R's wife. What is R to P?

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

Q34. X's mother-in-law is Y's grandmother. Y's mother is Z. How is Z related to X?

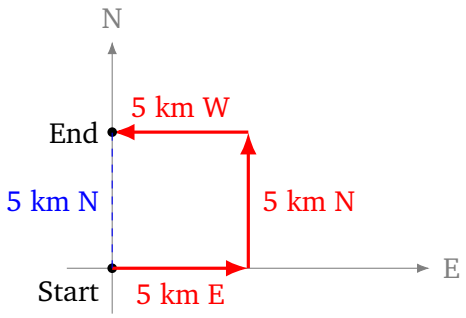
(A) Sister
(B) Mother
(C) Aunt
(D) Wife

Q35. Rita starts facing South. She turns left and walks 6 km. She then turns left again and walks 8 km. What is her straight-line distance from the starting point?



(A) 10 km
(B) 12 km
(C) 14 km
(D) 6 km

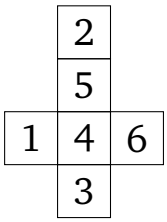
Q36. Suresh walks 5 km East, then 5 km North, then 5 km West. In which direction is he now from his starting point?



(A) East
(B) North
(C) West

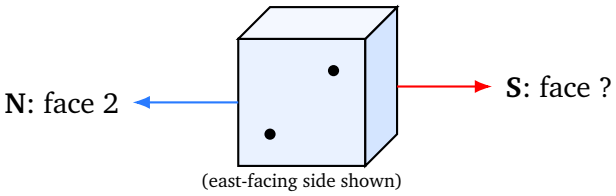
(D) South

Q37. The cross-shaped net below is folded to form a cube. Which face is **opposite** to face **5**?



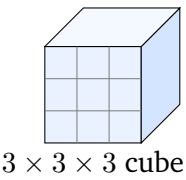
(A) 2
(B) 4
(C) 3
(D) 1

Q38. On a standard die, face **2** is pointing North. Which face points South?



(A) 1
(B) 4
(C) 6
(D) 5

Q39. 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 3 faces** painted?

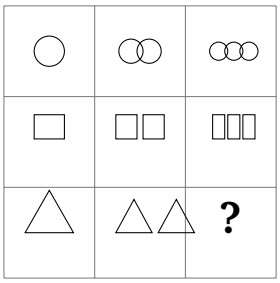


(A) 8
(B) 12

(C) 6

(D) 4

Q40. Study the 3×3 figure matrix. What should replace the **question mark**?



(A) △

(B) △△△

(C) □□□

(D) ○ ○ ○

Detailed Solutions

Q1.

Solution

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

Step 1 — Find the differences: $11-10=1$, $13-11=2$, $16-13=3$, $20-16=4$. The gaps are $1, 2, 3, 4, \ldots$ (each increases by 1).

Step 2 — Apply next gap: Next gap $= 5$, so missing term $= 20+5=25$.

Why other options are wrong:

- Option A (23): gap would be 3, repeating an earlier gap.
- Option B (24): gap would be 4, repeating the previous gap.
- Option D (26): gap would be 6, skipping gap 5.

Final Answer: $20+5=25 \Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q 1

Q2.

Solution

Concept — Letter-position with increasing even gaps: Convert letters to their alphabetic positions; the differences form an AP.

Step 1 — Positions: B=2, D=4, H=8, N=14, V=22. Differences: $2, 4, 6, 8$ (AP with $d=2$).

Step 2 — Next difference: $d=10$. Next position $= 22+10=32$. Since the alphabet has 26 letters, $32-26=6$, so the 6th letter = **F**.

Why other options are wrong:

- Option A (G): position 7, implies gap $= 9$ (breaks the $+2$ pattern).
- Option B (E): position 5, implies gap $=$ only 1.
- Option C (H): position 8, not consistent with position 32.

Final Answer: Position $32 \bmod 26 = 6 =$ F $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 2

Q3.

Solution

Concept — Equivalent fractions series: Every term equals $\frac{2}{3}$; numerators form AP ($d = 2$) and denominators form AP ($d = 3$).

Step 1 — Verify pattern: $\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12} = \frac{2}{3}$. Numerators: $2, 4, 6, 8$ (next $= 10$); denominators: $3, 6, 9, 12$ (next $= 15$).

Step 2 — Next term: $\frac{10}{15} = \frac{2}{3}$ ✓

Why other options are wrong:

- Option B ($\frac{10}{12}$): denominator should be 15, not 12.
- Option C ($\frac{8}{15}$): numerator should be 10, not 8.
- Option D ($\frac{12}{15}$): numerator should be 10, not 12.

Final Answer: $\frac{10}{15} \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q 3

Q4.

Solution

Concept — Two interleaved arithmetic series: Alternate terms form two independent APs.

Step 1 — Separate series:

- Odd positions (1st, 3rd, 5th, 7th): $17, 18, 19, 20$ (each $+1$).
- Even positions (2nd, 4th, 6th, 8th): $14, 15, 16, ?$ (each $+1$).

Step 2 — Next even-position term: $16 + 1 = 17$.

Why other options are wrong:

- Option A (18): next in Series 1 (odd positions), wrong position here.
- Option C (21): $20 + 1$, mixing up both series.
- Option D (16): already present as the 6th term.

Final Answer: 8th term $= 17 \Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q 4

Q5.

Solution

Concept — Geometric series: Each term is multiplied by a constant ratio $r = 3$.

Step 1 — Verify ratio: $6 \div 2 = 3$, $18 \div 6 = 3$, $54 \div 18 = 3$, $162 \div 54 = 3$. Confirmed $r = 3$.

Step 2 — Next term: $162 \times 3 = 486$.

Why other options are wrong:

- Option A (324): 162×2, applies ratio 2, not 3.
- Option B (378): not a multiple of 162 by an integer ratio.
- Option D (540): $162 \times \frac{10}{3}$, not a geometric term.

Final Answer: $162 \times 3 = 486 \Rightarrow$ C

Answer: (C) Go Back to Q 5

Q6.

Solution

Concept — Arithmetic series with common difference $d = -9$: Each term decreases by 9.

Step 1 — Verify: $100 - 9 = 91$, $91 - 9 = 82$, $82 - 9 = 73$, $73 - 9 = 64$. Confirmed $d = -9$.

Step 2 — Next term: $64 - 9 = 55$.

Why other options are wrong:

- Option A (58): $64 - 6$, wrong difference.
- Option B (57): $64 - 7$, wrong difference.
- Option C (56): $64 - 8$, wrong difference.

Final Answer: $64 - 9 = 55 \Rightarrow$ D

Answer: (D) Go Back to Q 6

Q7.

Solution

Concept — Fibonacci-type series: Each term is the sum of the two preceding terms.

Step 1 — Verify rule: $1+3=4$ ✓; $3+4=7$ ✓; $4+7=11$ ✓; $7+11=18$ ✓.

Step 2 — Next term: $11+18=29$.

Why other options are wrong:

- Option B (27): $18+9$, incorrect application.
- Option C (30): $18+12$, no such rule.
- Option D (25): $18+7$, skips the pattern.

Final Answer: $11+18=29 \Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q 7

Q8.

Solution

Concept — Instrument:Object-of-study analogy: The analogy links each scientific instrument to the object it is used to observe or study.

Step 1 — Identify the relationship: A Telescope is used to observe Stars (distant, large objects). A Microscope is used to observe Bacteria (microscopic organisms invisible to the naked eye).

Why other options are wrong:

- Option A (Telescope): the instrument itself, not what a microscope studies.
- Option C (Stars): observed by telescope, not microscope.
- Option D (Lens): a component of optical instruments, not an object of study.

Final Answer: Microscope $\rightarrow$ Bacteria $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q 8

Q9.

Solution

Concept — Temperature-intensity analogy: The analogy links a temperature state to its most extreme form.

Step 1 — Identify the relationship: Hot $\rightarrow$ extreme of hot = Boiling. Cold $\rightarrow$ extreme of cold = Freezing (the process/state when temperature drops to 0°C or below).

Why other options are wrong:

- Option A (Chilly): mild cold, not the extreme.
- Option B (Icy): describes texture or a frozen surface, not the extreme temperature process.
- Option D (Cool): slightly cold, far from the extreme.

Final Answer: Cold $\rightarrow$ Freezing $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q 9

Q10.

Solution

Concept — Number:Cube analogy: Each number is mapped to its perfect cube.

Step 1 — Verify: $6^3 = 6 \times 6 \times 6 = 216$ ✓.

Step 2 — Apply to 7: $7^3 = 7 \times 7 \times 7 = 343$.

Why other options are wrong:

- Option A (294): 7×42, not 7^3.
- Option B (300): $7^3 \neq 300$.
- Option C (336): 7×48, not 7^3.

Final Answer: $7^3 = 343 \Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q 10

Q11.

Solution

Concept — Sport:Playing-venue analogy: The analogy links each sport to the specific venue where it is officially played.

Step 1 — Identify relationship: Football is played on a Ground. Tennis is played on a Court (e.g., Wimbledon, grass/hard/clay court).

Why other options are wrong:

- Option B (Field): used for cricket/hockey, not the standard term for tennis.
- Option C (Ring): used for boxing/wrestling.
- Option D (Stadium): a structure that houses a ground/field; not sport-specific to tennis.

Final Answer: Tennis $\rightarrow$ Court $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q 11

Q12.

Solution

Concept — Plant-part:Component analogy: Each part of a plant is matched to its own fundamental unit/subpart.

Step 1 — Identify relationship: A Flower is made up of Petals. A Fruit contains Seeds (the reproductive unit of the fruit).

Why other options are wrong:

- Option A (Pulp): the edible flesh surrounding seeds, not the core unit of a fruit.
- Option C (Skin): the outer covering, not the defining unit.
- Option D (Core): the central part, often confused with the seed-bearing region but not the unit itself.

Final Answer: Fruit $\rightarrow$ Seed $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q 12

Q13.

Solution

Concept — Antonym-pair analogy: Both pairs are directional opposites along the same axis.

Step 1 — Identify pattern: Up ↔ Down (vertical axis opposites). Left ↔ Right (horizontal axis opposites).

Why other options are wrong:

- Option A (Middle): not a directional opposite of Left.
- Option B (Side): vague, not a specific opposite.
- Option D (Back): belongs to the front-back axis, not the left-right axis.

Final Answer: Left ↔ Right ⇒ C

Answer: (C) Go Back to Q 13

Q14.

Solution

Concept — Physical quantity:SI Unit analogy: Each physical quantity is paired with its standard measuring unit.

Step 1 — Identify pair: Speed is measured in km/h (or m/s). Power is measured in Watt (W) in SI, where 1 W = 1 J/s.

Why other options are wrong:

- Option A (Joule): unit of Energy/Work, not Power.
- Option B (Newton): unit of Force.
- Option C (Pascal): unit of Pressure.

Final Answer: Power → Watt ⇒ D

Answer: (D) Go Back to Q 14

Q15.

Solution

Concept — Letter-shift coding (+7): Each letter is replaced by the letter 7 positions ahead in the alphabet.

Step 1 — Verify with LION: L(12)+7=S(19), I(9)+7=P(16), O(15)+7=V(22), N(14)+7=U(21) $\Rightarrow$ SPVU ✓

Step 2 — Apply to BEAR: B(2)+7=I(9), E(5)+7=L(12), A(1)+7=H(8), R(18)+7=Y(25) $\Rightarrow$ **ILHY**

Why other options are wrong:

- Option B (IMHY): M=13, but E+7=L(12), not M.
- Option C (ILGY): G=7, but A+7=H(8), not G.
- Option D (IKHY): K=11, but E+7=L(12), not K.

Final Answer: BEAR $\rightarrow$ ILHY $\Rightarrow$ A

Answer: (A) Go Back to Q 15

Q16.

Solution

Concept — Positional swap coding (1st $\leftrightarrow$ 3rd letter): The 1st and 3rd letters of the word exchange positions; 2nd and 4th remain unchanged.

Step 1 — Verify with FACE: F(1)A(2)C(3)E(4) $\rightarrow$ C(3)A(2)F(1)E(4) = CAFE ✓

Step 2 — Apply to LAMP: L(1)A(2)M(3)P(4) $\rightarrow$ M(3)A(2)L(1)P(4) = **MALP**

Why other options are wrong:

- Option A (DOWR): unrelated to LAMP.
- Option C (DROW): unrelated to LAMP.
- Option D (WROD): a reversal, not a 1st-3rd swap.

Final Answer: LAMP $\rightarrow$ MALP $\Rightarrow$ 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 $27 - p$ (i.e., A↔Z, B↔Y, ...).

Step 1 — Apply to GOLD:

- G=7 $\rightarrow 27 - 7 = 20$ = T
- O=15 $\rightarrow 27 - 15 = 12$ = L
- L=12 $\rightarrow 27 - 12 = 15$ = O
- D=4 $\rightarrow 27 - 4 = 23$ = W

GOLD $\rightarrow$ **TLOW**

Why other options are wrong:

- Option A (TLWP): W and P wrong (L→O, D→W, not P).
- Option B (TMOW): M wrong (O→L, not M).
- Option D (SLOW): S wrong (G→T, not S).

Final Answer: GOLD $\rightarrow$ TLOW $\Rightarrow$ C

Answer: (C) Go Back to Q 17

Q18.

Solution

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

Step 1 — Verify with MEAN: M(13)+1=N, E(5)+1=F, A(1)+1=B, N(14)+1=O $\Rightarrow$ NFBO ✓

Step 2 — Apply to BACK: B(2)+1=C, A(1)+1=B, C(3)+1=D, K(11)+1=L $\Rightarrow$ **CBDL**

Why other options are wrong:

- Option A (ABCK): no shift applied.
- Option B (BCDK): order shuffled incorrectly (not +1 of BACK in sequence).
- Option C (CBDM): M=13, but K+1=L(12), not M.

Final Answer: BACK $\rightarrow$ CBDL $\Rightarrow$ D

Answer: (D) Go Back to Q 18

Q19.

Solution

Concept — Vowel-removal coding: All vowels (A, E, I, O, U) are deleted; only consonants are retained in order.

Step 1 — Identify letters in TIGER: T (consonant), I (vowel → remove), G (consonant), E (vowel → remove), R (consonant).

Step 2 — Retained letters: T, G, R ⇒ **TGR**

Why other options are wrong:

- Option B (TGRE): E is a vowel and must be removed.
- Option C (TGE): E is a vowel; also G and E are out of order.
- Option D (TR): G is a consonant and must be retained.

Final Answer: TIGER → TGR ⇒ A

Answer: (A) Go Back to Q 19

Q20.

Solution

Concept — Positional swap coding (1st ↔ 3rd letter): The 1st and 3rd letters exchange positions; 2nd and 4th are unchanged.

Step 1 — Verify with LAMP: L(1)A(2)M(3)P(4) → M(3)A(2)L(1)P(4) = MALP ✓

Step 2 — Apply to FIRE: F(1)I(2)R(3)E(4) → R(3)I(2)F(1)E(4) = **RIFE**

Why other options are wrong:

- Option A (EFIR): complete reversal of FIRE, not a 1st-3rd swap.
- Option C (FIER): only 3rd and 4th letters changed, not 1st and 3rd.
- Option D (IRFE): incorrectly swaps 1st-2nd instead.

Final Answer: FIRE → RIFE ⇒ B

Answer: (B) Go Back to Q 20

Q21.

Solution

Concept — Classification by mode/medium of transport:

Step 1 — Categorise each:

- Car, Bus, Bicycle $\rightarrow$ **land** vehicles (travel on roads/paths).
- Ship $\rightarrow$ **water** vehicle (travels on sea/river).

Ship belongs to a different medium and is the odd one out.

Why other options are wrong:

- Option A (Car): land vehicle; belongs with the group.
- Option B (Bus): land vehicle; belongs with the group.
- Option D (Bicycle): land vehicle; belongs with the group.

Final Answer: Ship (water transport) $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q 21

Q22.

Solution

Concept — Classification by perfect cubes: All members except one are perfect cubes (n^3 for integer n).

Step 1 — Check each: $8 = 2^3$, $27 = 3^3$, $64 = 4^3$, $125 = 5^3$. For 100: $4^3 = 64$ and $5^3 = 125$, so 100 is **not** a perfect cube.

Why other options are wrong:

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

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

Answer: (D) Go Back to Q 22

Q23.

Solution

Concept — Classification by art form: All members except one are literary forms.

Step 1 — Categorise:

- Novel, Poem, Drama, Essay → **literary** forms (written word).
- Symphony → a large-scale **musical** composition (not a literary form).

Why other options are wrong:

- Option B (Novel): a literary form; belongs.
- Option C (Drama): a literary/theatrical form; belongs.
- Option D (Essay): a literary form; belongs.

Final Answer: Symphony (musical form) ⇒ $\boxed{A}$

Answer: (A) Go Back to Q 23

Q24.

Solution

Concept — Classification by crop category:

Step 1 — Categorise:

- Mustard, Sunflower, Groundnut → **oilseed** crops (cultivated primarily for edible oil).
- Wheat → a **cereal/food grain** crop.

Why other options are wrong:

- Option A (Mustard): oilseed crop; belongs.
- Option C (Sunflower): oilseed crop; belongs.
- Option D (Groundnut): oilseed crop; belongs.

Final Answer: Wheat (cereal, not oilseed) ⇒ $\boxed{B}$

Answer: (B) Go Back to Q 24

Q25.

Solution

Concept — Classification by river origin:

Step 1 — Categorise:

- Ganga, Brahmaputra, Indus → **Himalayan rivers** (glacier-fed, perennial, originate in the Himalayas).
- Cauvery → a **peninsular river** (rain-fed, originates in the Western Ghats/Deccan plateau).

Why other options are wrong:

- Option A (Ganga): Himalayan river; belongs.
- Option B (Indus): Himalayan river; belongs.
- Option D (Brahmaputra): Himalayan river; belongs.

Final Answer: Cauvery (peninsular river) ⇒ C

Answer: (C) Go Back to Q 25

Q26.

Solution

Concept — Classification by Indian meteorological season: The India Meteorological Department (IMD) recognises four seasons: Winter (Dec–Feb), Summer/Pre-monsoon (Mar–May), Southwest Monsoon (Jun–Sep), and Post-monsoon (Oct–Nov).

Step 1 — Evaluate: Summer, Monsoon, and Winter are all standard IMD seasons. "Autumn" as a standalone season is a temperate-zone concept; India does not formally list it as a separate meteorological season.

Why other options are wrong:

- Option A (Summer): recognised IMD season (Mar–May).
- Option B (Monsoon): the primary Indian season (Jun–Sep).
- Option C (Winter): recognised IMD season (Dec–Feb).

Final Answer: Autumn is the odd one out ⇒ D

Answer: (D) Go Back to Q 26

Q27.

Solution

Concept — Universal Affirmative Syllogism (Barbara form): If all A are B, and X is A, then X is B.

Step 1 — Map the statements:

- S1: All Mountains $\subseteq$ High things.
- S2: Himalayas $\in$ Mountains.

Step 2 — Test conclusions:

- **Conclusion I** (Himalayas are high): Himalayas $\in$ Mountains $\subseteq$ High things $\Rightarrow$ Himalayas are high. **VALID** ✓
- **Conclusion II** (All high things are mountains): This is the converse of S1, which is not logically implied. **INVALID** $\times$

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 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q 27

Q28.

Solution

Concept — Particular + Universal Affirmative Syllogism:

Step 1 — Map the statements:

- S1: Some Chairs are Wooden $\Rightarrow$ Chairs $\cap$ Wooden $\neq \varnothing$.
- S2: All Wooden $\subseteq$ Durable.

Step 2 — Test conclusions:

- **Conclusion I** (All chairs are durable): Only *some* chairs are wooden; the rest may not be durable. **INVALID** $\times$
- **Conclusion II** (Some chairs are durable): Those chairs that are wooden $\subseteq$ Durable, so some chairs are durable. **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 28

Q29.

Solution

Concept — Universal Affirmative + Universal Negative chain:

Step 1 — Map:

- S1: All Scientists $\subseteq$ Intelligent.
- S2: No Intelligent person fails (Intelligent $\cap$ Failures $= \varnothing$).

Step 2 — Test conclusions:

- **Conclusion I** (No scientist fails): Scientists $\subseteq$ Intelligent $\subseteq$ Non-failures $\Rightarrow$ no scientist fails. **VALID** ✓
- **Conclusion II** (Some who do not fail are scientists): All scientists are non-failures (from I), so scientists form a non-empty subset of non-failures. **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 $\Rightarrow$ C

Answer: (C) Go Back to Q 29

Q30.

Solution

Concept — Particular + Particular gives no definite conclusion: When both premises are particular ("some"), no universal or particular conclusion about the non-overlapping sets can be drawn.

Step 1 — Map:

- S1: Some Poets are Singers (partial overlap).
- S2: Some Singers are Actors (partial overlap).

Step 2 — Test conclusions:

- **Conclusion I** (Some poets are actors): The poet-singers and singer-actors may be completely different singers. No guarantee of poets being actors. **INVALID** $\times$
- **Conclusion II** (All actors are poets): Far too strong; not supported at all. **INVALID** $\times$

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 $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q 30

Q31.

Solution

Concept — Universal Affirmative Syllogism (Barbara form):

Step 1 — Map:

- S1: All Planets $\subseteq$ (revolve around stars).
- S2: Earth $\in$ Planets.

Step 2 — Test conclusions:

- **Conclusion I** (Earth revolves around a star): Earth $\in$ Planets $\subseteq$ Revolvers $\Rightarrow$ Earth revolves around a star. **VALID** $\checkmark$

- **Conclusion II** (All revolvers around stars are planets): This is the converse of S1, not logically implied. **INVALID** $\times$

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 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q 31

Q32.

Solution

Concept — Blood relation chain (father's brother's son):

Step 1 — Trace the chain:

- Akash's father's brother = Akash's **paternal uncle**.
- Akash's uncle's son = Akash's **cousin**.

So Ravi is Akash's cousin.

Why other options are wrong:

- Option A (Brother): that would be Akash's father's son.
- Option C (Nephew): that would be Akash's own sibling's son.
- Option D (Uncle): that is Akash's father's brother himself, not the son.

Final Answer: Ravi is Akash's Cousin $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q 32

Q33.

Solution

Concept — Blood relation chain (daughter, wife, husband):

Step 1 — Trace the chain:

- P is Q's daughter ⇒ Q is P's mother.
- Q is R's wife ⇒ R is Q's husband.
- R is Q's husband and Q is P's mother ⇒ R is P's **father**.

Why other options are wrong:

- Option A (Brother): R is Q's husband, not her brother.
- Option B (Uncle): R is the direct father, not uncle.
- Option D (Grandfather): R is one generation above P as father, not two.

Final Answer: R is P's Father ⇒ C

Answer: (C) Go Back to Q 33

Q34.

Solution

Concept — Extended blood relation chain:

Step 1 — Identify known relations:

- Z = Y's mother (given).
- Y's grandmother (maternal) = Z's mother.
- X's mother-in-law = X's wife's mother.

Step 2 — Link: X's mother-in-law = Y's grandmother = Z's mother. Therefore X's wife's mother = Z's mother, which means X's wife = Z.

Why other options are wrong:

- Option A (Sister): no sibling relation between X and Z is established.
- Option B (Mother): X's mother-in-law is Z's mother, not Z herself.
- Option C (Aunt): no such relation follows from the given chain.

Final Answer: Z is X's Wife ⇒ D

Answer: (D) Go Back to Q 34

Q35.

Solution

Concept — Direction tracing with Pythagoras theorem:

Step 1 — Trace Rita's path:

- Facing South; turns left $\Rightarrow$ now facing **East**.
- Walks 6 km East $\Rightarrow$ displacement: $(6, 0)$.
- Turns left when facing East $\Rightarrow$ now facing **North**.
- Walks 8 km North $\Rightarrow$ displacement: $(6, 8)$.

Step 2 — Straight-line distance from start:

$$d = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10 \text{ km}$$

Why other options are wrong:

- Option B (12 km): $\sqrt{36 + 108}$, incorrect.
- Option C (14 km): $\sqrt{196}$, no basis.
- Option D (6 km): only one leg of the journey.

Final Answer: $d = 10$ km $\Rightarrow$ A

Answer: (A) Go Back to Q 35

Q36.

Solution

Concept — Net displacement and direction:

Step 1 — Trace Suresh's path:

- Start: $(0, 0)$.
- Walk 5 km East $\Rightarrow (5, 0)$.
- Walk 5 km North $\Rightarrow (5, 5)$.
- Walk 5 km West $\Rightarrow (0, 5)$.

Step 2 — Direction from start: Current position $(0, 5)$ relative to start $(0, 0)$: net East-West = 0, net North = 5 km. Direction = **North**.

Why other options are wrong:

- Option A (East): net East displacement = 0 (5 km E then 5 km W cancel).

- Option C (West): net West displacement = 0.
- Option D (South): Suresh is 5 km North, not South.

Final Answer: Direction = North $\Rightarrow$ B

Answer: (B) Go Back to Q 36

Q37.

Solution

Concept — Cube-net folding to find opposite faces:

Step 1 — Read the cross-shaped net:

- Vertical strip (bottom to top): 3 (y=-1), 4 (y=0, cross-center), 5 (y=1), 2 (y=2).
- Horizontal strip: 1 (left of 4), 4 (center), 6 (right of 4).

Step 2 — Folding result:

- Face 4 (center) $\rightarrow$ bottom; Face 2 (top of vertical strip) $\rightarrow$ top (opposite 4).
- Face 5 (above 4) folds to north; Face 3 (below 4) folds to south $\Rightarrow$ **3 is opposite 5**.
- Face 1 (left) $\rightarrow$ west; Face 6 (right) $\rightarrow$ east (opposite 1).

Why other options are wrong:

- Option A (2): opposite of 4, not 5.
- Option B (4): the bottom face itself.
- Option D (1): opposite of 6.

Final Answer: Face opposite to 5 = 3 $\Rightarrow$ C

Answer: (C) Go Back to Q 37

Q38.

Solution

Concept — Standard die: opposite faces sum to 7. The three opposite pairs on a standard die are: $1 \leftrightarrow 6$, $2 \leftrightarrow 5$, $3 \leftrightarrow 4$.

Step 1 — Identify opposite of face 2:

$$2 + \text{opposite} = 7 \Rightarrow \text{opposite} = 5$$

Face 2 points North; the opposite face (pointing South) = **5**.

Why other options are wrong:

- Option A (1): 1 is opposite to 6, not 2.
- Option B (4): 4 is opposite to 3, not 2.
- Option C (6): 6 is opposite to 1, not 2.

Final Answer: South face = 5 $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q 38

Q39.

Solution

Concept — Painted cube analysis: When a $3 \times 3 \times 3$ cube is painted on all faces and cut into 27 equal 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 $\times$ 3 faces each.
- **Edge** cubes (2 faces painted): 12 edges $\times$ 1 middle cube per edge $= 12$.
- **Face-center** cubes (1 face painted): 6 faces $\times$ 1 center cube $= 6$.
- **Inner** cube (0 faces painted): 1.

Step 2 — Answer: Cubes with **exactly 3** painted faces = corner cubes = **8**.

Why other options are wrong:

- Option B (12): number of edge cubes (2 painted faces).
- Option C (6): number of face-center cubes (1 painted face).
- Option D (4): incorrect count; no group of 4 in this analysis.

Final Answer: 8 corner cubes $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q 39

Q40.

Solution

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

Step 1 — Identify column pattern (count):

- Column 1: always 1 shape.
- Column 2: always 2 shapes.
- Column 3: always 3 shapes.

Step 2 — Identify row pattern (shape):

- Row 1: circles (○). Row 2: squares (□). Row 3: triangles (△).

Step 3 — Missing cell: Row 3, Column 3 ⇒ 3 triangles = △△△.

Why other options are wrong:

- Option A (△): only 1 triangle, should be 3.
- Option C (□□□): wrong shape; Row 3 uses triangles.
- Option D (○ ○ ○): wrong shape; Row 3 uses triangles.

Final Answer: △△△ ⇒ B

Answer: (B) Go Back to Q 40

Answer Key

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