

MAH BEd CET — Mental Ability

Sample Paper – 5

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:

2, 5, 10, 17, 26, ____

- (A) 35
- (B) 37
- (C) 39
- (D) 41

Q2. Find the missing term in the series:

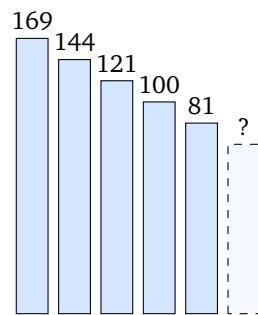
3, 6, 7, 14, 15, 30, 31, ____

- (A) 32
- (B) 60
- (C) 62
- (D) 64



Q3. Find the missing term in the series:

169, 144, 121, 100, 81, ____



Descending bar pattern

- (A) 64
- (B) 66
- (C) 68
- (D) 70

Q4. Find the next term in the series:

3, 4, 7, 11, 18, 29, ____

- (A) 40
- (B) 43
- (C) 45
- (D) 47

Q5. Find the next term in the series:

3, 9, 27, 81, 243, ____

- (A) 486
- (B) 729
- (C) 648
- (D) 972



Q6. Find the missing letter in the series:

A, Z, C, X, E, V, G, ____

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

Q7. Letters at alphabetical positions equal to triangular numbers (1, 3, 6, 10, 15, 21, ...) form the series below. Find the missing letter:

A, C, F, J, O, ____

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

Q8. Choose the word that best completes the analogy:

Doctor : Stethoscope :: Carpenter : ____

- (A) Hammer
- (B) Chisel
- (C) Drill
- (D) Saw

Q9. Choose the word that best completes the analogy:

Bee : Buzz :: Snake : ____

- (A) Growl
- (B) Hiss
- (C) Bark
- (D) Roar

Q10. Choose the word that best completes the analogy:



France : Paris :: Germany : ____

- (A) Vienna
- (B) Amsterdam
- (C) Berlin
- (D) Brussels

Q11. Choose the word that best completes the analogy:

Page : Book :: Brick : ____

- (A) Wall
- (B) Cement
- (C) Stone
- (D) House

Q12. Choose the number that best completes the analogy:

3 : 27 :: 4 : ____

- (A) 16
- (B) 32
- (C) 48
- (D) 64

Q13. Choose the word that best completes the analogy:

Create : Destroy :: Build : ____

- (A) Construct
- (B) Demolish
- (C) Repair
- (D) Paint

Q14. Choose the unit that best completes the analogy:

Length : Metre :: Mass : ____

- (A) Newton
- (B) Joule



- (C) Kilogram
- (D) Pascal

Q15. If COME is coded as AMKC (each letter shifted back by 2 positions in the alphabet), then FISH is coded as _____

- (A) EGPG
- (B) DFQG
- (C) EHRF
- (D) DGQF

Q16. If DAY is coded as YAD (the word is written in reverse), then NIGHT is coded as _____

- (A) THGIN
- (B) TIGHN
- (C) TGHIN
- (D) THGNI

Q17. In a certain code, a word is replaced by the **sum** of the alphabetical positions of its letters (A= 1, B= 2, ..., Z= 26). If ACE= 9, what is the code for CAGE?

- (A) 13
- (B) 14
- (C) 16
- (D) 17

Q18. If STAR is coded as RATS (first and last letters are swapped), then LAMP is coded as _____

- (A) ALMP
- (B) PAML
- (C) MALP
- (D) PLAM



Q19. If only the **vowels** of a word are extracted in order (all consonants removed), JUNGLE becomes UE. What does SIMPLE become?

- (A) IE
- (B) SE
- (C) IM
- (D) IP

Q20. If APPLE is coded as DSSOH (each letter shifted +3 positions), then FIG is coded as _____

- (A) GJI
- (B) HIJ
- (C) GIJ
- (D) ILJ

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

Whale Shark Dolphin Dugong

- (A) Whale
- (B) Shark
- (C) Dolphin
- (D) Dugong

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

16, 25, 35, 49

- (A) 16
- (B) 25
- (C) 35
- (D) 49

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

Microphone Piano Guitar Violin



- (A) Microphone
- (B) Piano
- (C) Guitar
- (D) Violin

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

Maharashtra Kerala Goa Rajasthan

- (A) Maharashtra
- (B) Kerala
- (C) Goa
- (D) Rajasthan

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

Algorithm Monsoon Bug Syntax

- (A) Algorithm
- (B) Monsoon
- (C) Bug
- (D) Syntax

Q26. Which one does **NOT** belong to the recognised vitamins?

Vitamin A Vitamin B Vitamin F Vitamin K

- (A) Vitamin A
- (B) Vitamin B
- (C) Vitamin F
- (D) Vitamin K

Q27. Statements:

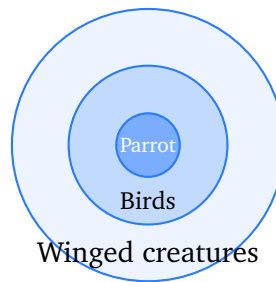
(1) All birds have wings. (2) Parrot is a bird.

Conclusions:

I. Parrot has wings. II. All winged creatures are birds.

Which conclusion(s) follow?





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

Q28. Statements:

(1) Some teachers are kind. (2) All kind people are respected.

Conclusions:

I. All teachers are respected. II. Some teachers are respected.

Which conclusion(s) follow?

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

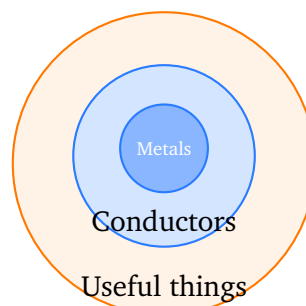
Q29. Statements:

(1) All metals conduct electricity. (2) All conductors are useful.

Conclusions:

I. All metals are useful. II. Some useful things are metals.

Which conclusion(s) follow?



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

Q30. Statements:

(1) All cats are felines. (2) No feline is a dog.

Conclusions:

I. No cat is a dog. II. All dogs are felines.

Which conclusion(s) follow?

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

Q31. Statements:

(1) Some students are athletes. (2) All athletes wear uniforms.

Conclusions:

I. All students wear uniforms. II. Some students wear uniforms.

Which conclusion(s) follow?

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

Q32. Suresh introduces Ramesh saying: “His mother is the only daughter of my father.” How is Ramesh related to Suresh?

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



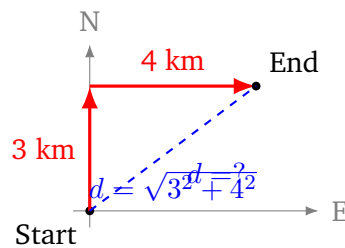
Q33. X is Y's husband. Y is Z's mother. How is X related to Z?

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

Q34. A's sister is B. B's daughter is C. How is A related to C?

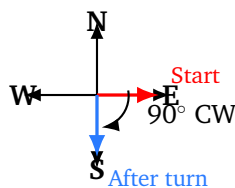
- (A) Mother
- (B) Sister
- (C) Cousin
- (D) Maternal Aunt

Q35. A man walks 3 km towards North and then 4 km towards East. What is his straight-line distance from the starting point?



- (A) 7 km
- (B) 6 km
- (C) 5 km
- (D) 4 km

Q36. A person is facing **East**. He turns **90 degrees clockwise**. Which direction is he now facing?

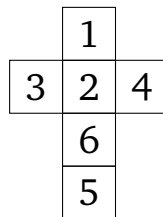


- (A) East



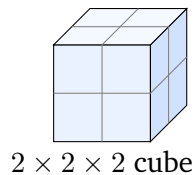
- (B) South
- (C) West
- (D) North

Q37. The net below is folded to form a cube. Which face is **opposite** to face 2?



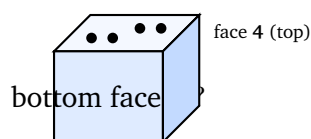
- (A) 1
- (B) 3
- (C) 6
- (D) 5

Q38. A $2 \times 2 \times 2$ cube is painted on **all six** faces and then cut into **8** equal smaller cubes. How many smaller cubes have **exactly 3** faces painted?



- (A) 2
- (B) 4
- (C) 8
- (D) 6

Q39. On a standard die (where opposite faces always sum to 7), face 4 is on the **top**. Which face is on the **bottom**?

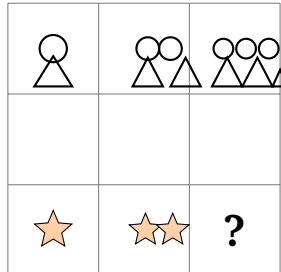


- (A) 3



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

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



- (A) 1 star
- (B) 2 triangles
- (C) 3 circles
- (D) 3 stars



Detailed Solutions

Q1.

Solution

Concept — Difference-of-differences series: The differences between consecutive terms themselves form an arithmetic sequence.

Step 1 — Find first differences: $5 - 2 = 3$, $10 - 5 = 5$, $17 - 10 = 7$, $26 - 17 = 9$. Differences: 3, 5, 7, 9 (AP with $d = 2$).

Step 2 — Next difference: $9 + 2 = 11$. Missing term = $26 + 11 = 37$.

Why other options are wrong:

- Option A (35): implies next difference = 9, repeating the previous gap.
- Option C (39): implies difference = 13, skipping gap 11.
- Option D (41): implies difference = 15, too large a jump.

Final Answer: $26 + 11 = 37 \Rightarrow$ B

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

Q2.

Solution

Concept — Alternating $\times 2$ then $+1$ series: Odd steps multiply by 2; even steps add 1.

Step 1 — Verify pattern: $3 \times 2 = 6$; $6 + 1 = 7$; $7 \times 2 = 14$; $14 + 1 = 15$; $15 \times 2 = 30$; $30 + 1 = 31$. Pattern holds throughout.

Step 2 — Next term: After 31 the rule is $\times 2$: $31 \times 2 = 62$.

Why other options are wrong:

- Option A (32): only adds 1; that step requires multiplication.
- Option B (60): 30×2 ; misidentifies which term to double.
- Option D (64): 32×2 ; applies addition then multiplication, wrong order.

Final Answer: $31 \times 2 = 62 \Rightarrow$ C

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



Q3.

Solution

Concept — Descending perfect squares: Each term is the square of a consecutive integer, counting down.

Step 1 — Identify squares: $169 = 13^2$, $144 = 12^2$, $121 = 11^2$, $100 = 10^2$, $81 = 9^2$. The base decreases by 1 each time.

Step 2 — Next term: Base = 8, so missing term = $8^2 = 64$.

Why other options are wrong:

- Option B (66): not a perfect square ($8^2 = 64$, $9^2 = 81$).
- Option C (68): not a perfect square.
- Option D (70): not a perfect square.

Final Answer: $8^2 = 64 \Rightarrow \boxed{A}$

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

Q4.

Solution

Concept — Fibonacci-type series starting with 3 and 4: Each term is the sum of the two immediately preceding terms.

Step 1 — Verify rule: $3 + 4 = 7 \checkmark$; $4 + 7 = 11 \checkmark$; $7 + 11 = 18 \checkmark$; $11 + 18 = 29 \checkmark$.

Step 2 — Next term: $18 + 29 = 47$.

Why other options are wrong:

- Option A (40): $29 + 11$, incorrect application.
- Option B (43): $29 + 14$, no such rule.
- Option C (45): $29 + 16$, no such rule.

Final Answer: $18 + 29 = 47 \Rightarrow \boxed{D}$

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



Q5.

Solution

Concept — Powers of 3 (geometric series with ratio 3): Each term is 3^n for $n = 1, 2, 3, \dots$

Step 1 — Verify: $3 = 3^1$, $9 = 3^2$, $27 = 3^3$, $81 = 3^4$, $243 = 3^5$. Ratio = 3 throughout.

Step 2 — Next term: $3^6 = 729$.

Why other options are wrong:

- Option A (486): 243×2 , applies ratio 2, not 3.
- Option C (648): $243 \times \frac{8}{3}$, not an integer ratio.
- Option D (972): 243×4 , applies ratio 4, not 3.

Final Answer: $3^6 = 729 \Rightarrow \boxed{\text{B}}$

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

Q6.

Solution

Concept — Two interleaved letter series: Odd-position terms advance forward; even-position terms retreat backward through the alphabet, each skipping one letter.

Step 1 — Separate the two strands:

- Odd positions (1st, 3rd, 5th, 7th): A, C, E, G $\rightarrow$ every other letter forward (skip one).
- Even positions (2nd, 4th, 6th, 8th): Z, X, V, ? $\rightarrow$ every other letter backward (skip one).

Step 2 — 8th term (even strand): Z(26) $\rightarrow$ X(24) $\rightarrow$ V(22) $\rightarrow$ T(20). Next even term = T.

Why other options are wrong:

- Option A (R): position 18; skips two letters instead of one.
- Option B (U): position 21; not in the backward-skip-one sequence.
- Option D (S): position 19; off by one from the pattern.

Final Answer: 8th term = T $\Rightarrow \boxed{\text{C}}$

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



Q7.

Solution

Concept — Triangular number positions in the alphabet: Triangular numbers are $T_n = \frac{n(n+1)}{2}$: 1, 3, 6, 10, 15, 21, ...

Step 1 — Map positions to letters:

- $T_1 = 1 \rightarrow \text{A}; T_2 = 3 \rightarrow \text{C}; T_3 = 6 \rightarrow \text{F}; T_4 = 10 \rightarrow \text{J}; T_5 = 15 \rightarrow \text{O}; T_6 = 21 \rightarrow \text{U}.$

Step 2 — Missing letter: $T_6 = 21$; the 21st letter of the alphabet = U.

Why other options are wrong:

- Option B (T): position 20, not a triangular number.
- Option C (S): position 19, not a triangular number.
- Option D (V): position 22, not a triangular number.

Final Answer: Letter at position 21 = U $\Rightarrow$ A

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

Q8.

Solution

Concept — Profession:Primary diagnostic/cutting tool analogy: Each professional is paired with the single most characteristic tool of their trade.

Step 1 — Identify relationship: A Doctor uses a Stethoscope as the primary diagnostic instrument. A Carpenter's primary cutting tool is a **Saw** (used to cut and shape wood).

Why other options are wrong:

- Option A (Hammer): used for driving nails, not cutting.
- Option B (Chisel): used for carving/chipping, not the primary tool.
- Option C (Drill): used for boring holes; not the defining carpenter's tool in the analogy context.

Final Answer: Carpenter $\rightarrow$ Saw $\Rightarrow$ D

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



Q9.

Solution

Concept — Animal:Characteristic sound analogy: Each animal is paired with the specific sound it makes.

Step 1 — Identify pair: A Bee produces a Buzz. A Snake produces a **Hiss** (the sound of air forced through its glottis).

Why other options are wrong:

- Option A (Growl): sound of a bear or tiger, not a snake.
- Option C (Bark): sound of a dog.
- Option D (Roar): sound of a lion or tiger.

Final Answer: Snake → Hiss ⇒ B

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

Q10.

Solution

Concept — Country:Capital city analogy: Each country is paired with its official capital city.

Step 1 — Identify pair: France → Paris. Germany → **Berlin** (the capital and largest city of Germany).

Why other options are wrong:

- Option A (Vienna): capital of Austria, not Germany.
- Option B (Amsterdam): capital of the Netherlands.
- Option D (Brussels): capital of Belgium.

Final Answer: Germany → Berlin ⇒ C

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



Q11.

Solution

Concept — Part:Whole (structural component) analogy: The first word is a single structural unit; the second is the complete structure made of many such units.

Step 1 — Identify relationship: A Page is one unit of a Book (a book is made of many pages). A Brick is one unit of a **Wall** (a wall is constructed by assembling many bricks).

Why other options are wrong:

- Option B (Cement): the bonding material between bricks, not the whole structure.
- Option C (Stone): a different building material, not what bricks form.
- Option D (House): a building that contains walls; too broad a relationship.

Final Answer: Brick → Wall ⇒

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

Q12.

Solution

Concept — Number:Perfect cube analogy: Each number is mapped to its cube (n^3).

Step 1 — Verify: $3^3 = 3 \times 3 \times 3 = 27$ ✓.

Step 2 — Apply to 4: $4^3 = 4 \times 4 \times 4 = 64$.

Why other options are wrong:

- Option A (16): $4^2 = 16$; this is the square, not the cube.
- Option B (32): 4×8 , not 4^3 .
- Option C (48): 4×12 , not 4^3 .

Final Answer: $4^3 = 64$ ⇒

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



Q13.

Solution

Concept — Antonym-action pair analogy: Both pairs are exact opposites in the domain of making/unmaking.

Step 1 — Identify pattern: Create $\leftrightarrow$ Destroy (to bring into existence vs. to annihilate). Build $\leftrightarrow$ **Demolish** (to construct vs. to tear down completely).

Why other options are wrong:

- Option A (Construct): a synonym of Build, not its opposite.
- Option C (Repair): means to fix, not to demolish.
- Option D (Paint): a surface treatment, unrelated to the making/unmaking axis.

Final Answer: Build $\leftrightarrow$ Demolish $\Rightarrow$ B

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

Q14.

Solution

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

Step 1 — Identify pair: Length is measured in Metres (m). Mass is measured in **Kilograms** (kg) in the SI system.

Why other options are wrong:

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

Final Answer: Mass $\rightarrow$ Kilogram $\Rightarrow$ C

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



Q15.

Solution

Concept — Letter-shift coding (−2): Each letter is replaced by the letter 2 positions earlier in the alphabet.

Step 1 — Verify with COME: $C(3)-2 = A(1)$; $O(15)-2 = M(13)$; $M(13)-2 = K(11)$; $E(5)-2 = C(3) \Rightarrow AMKC \checkmark$

Step 2 — Apply to FISH: $F(6)-2 = D(4)$; $I(9)-2 = G(7)$; $S(19)-2 = Q(17)$; $H(8)-2 = F(6) \Rightarrow DGQF$

Why other options are wrong:

- Option A (EGPG): $E=5$, but $F-2 = D(4)$, not E; G at end, but $H-2 = F$, not G.
- Option B (DFQG): D correct, but F instead of G for $I-2$; G at end instead of F.
- Option C (EHRF): E wrong ($F-2 = D$); H wrong ($I-2 = G$); R wrong ($S-2 = Q$).

Final Answer: FISH $\rightarrow$ DGQF $\Rightarrow$ D

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

Q16.

Solution

Concept — Word-reversal coding: The letters of the word are written in the exact reverse order.

Step 1 — Verify with DAY: $D(1)A(2)Y(3)$ reversed $\Rightarrow Y(3)A(2)D(1) = YAD \checkmark$

Step 2 — Apply to NIGHT: $N(1)I(2)G(3)H(4)T(5)$ reversed $\Rightarrow T(5)H(4)G(3)I(2)N(1) = THGIN$

Why other options are wrong:

- Option B (TIGHN): T is correct but I comes before G; in the reversal G(3rd) comes before I(2nd).
- Option C (TGHIN): G before H before I before N; reversal gives T-H-G-I-N, not T-G-H-I-N.
- Option D (THGNI): N before I at the end; reversal gives ...I-N, not N-I.

Final Answer: NIGHT reversed = THGIN $\Rightarrow$ A



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

Q17.

Solution

Concept — Alphabetical position-sum coding: The code equals the sum of alphabetical positions of all letters ($A = 1, B = 2, \dots, Z = 26$).

Step 1 — Verify with ACE: $A=1, C=3, E=5 \Rightarrow 1 + 3 + 5 = 9 \checkmark$

Step 2 — Apply to CAGE: $C=3, A=1, G=7, E=5 \Rightarrow 3 + 1 + 7 + 5 = 16$

Why other options are wrong:

- Option A (13): $C+A+G = 3+1+7 = 11$, missing E(5); or wrong letter values.
- Option B (14): $C+A+E+? = 3+1+5+5 = 14$, incorrect; counts E twice and omits G.
- Option D (17): adds 1 extra; no letter combination of CAGE sums to 17.

Final Answer: $CAGE = 3 + 1 + 7 + 5 = 16 \Rightarrow \boxed{C}$

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

Q18.

Solution

Concept — First-and-last letter swap coding: The 1st and last letters exchange positions; all middle letters remain unchanged.

Step 1 — Verify with STAR: $S(1st)T(2nd)A(3rd)R(last) \rightarrow R(last)T(2nd)A(3rd)S(1st) = RATS \checkmark$

Step 2 — Apply to LAMP: $L(1st)A(2nd)M(3rd)P(last) \rightarrow P(last)A(2nd)M(3rd)L(1st) = PAML$

Why other options are wrong:

- Option A (ALMP): shuffles all four letters, not just 1st and last.
- Option C (MALP): this is a 1st $\leftrightarrow$ 3rd swap, not 1st $\leftrightarrow$ last.
- Option D (PLAM): swaps 1st and last but also rearranges middle letters.

Final Answer: $LAMP \rightarrow PAML \Rightarrow \boxed{B}$

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



Q19.

Solution

Concept — Vowel-extraction coding: Only vowels (A, E, I, O, U) are retained in their original order; all consonants are deleted.

Step 1 — Verify with JUNGLE: J(cons), U(vowel), N(cons), G(cons), L(cons), E(vowel) $\Rightarrow$ UE ✓

Step 2 — Apply to SIMPLE: S(cons), I(vowel), M(cons), P(cons), L(cons), E(vowel) $\Rightarrow$ IE

Why other options are wrong:

- Option B (SE): S is a consonant and must be removed; only I and E are vowels.
- Option C (IM): M is a consonant, not retained; I is correct but M is not a vowel.
- Option D (IP): P is a consonant; only I and E are vowels of SIMPLE.

Final Answer: SIMPLE $\rightarrow$ IE $\Rightarrow$ A

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

Q20.

Solution

Concept — Letter-shift coding (+3): Each letter is replaced by the letter 3 positions ahead in the alphabet.

Step 1 — Verify with APPLE: A(1)+3=D(4); P(16)+3=S(19); P(16)+3=S(19); L(12)+3=O(15); E(5)+3=H(8) $\Rightarrow$ DSSOH ✓

Step 2 — Apply to FIG: F(6)+3=I(9); I(9)+3=L(12); G(7)+3=J(10) $\Rightarrow$ ILJ

Why other options are wrong:

- Option A (GJI): applies +1 to F and wrong shifts to others.
- Option B (HLJ): H=F+2, I=I+0, J=G+3; inconsistent shifts.
- Option C (GLJ): G=F+1, wrong; the rule is +3 uniformly.

Final Answer: FIG $\rightarrow$ ILJ $\Rightarrow$ D

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



Q21.

Solution**Concept — Classification by biological class (marine animals):****Step 1 — Categorise each:**

- Whale → **marine mammal** (class Mammalia; breathes air).
- Dolphin → **marine mammal** (class Mammalia; breathes air).
- Dugong → **marine mammal** (class Mammalia; breathes air; related to manatee).
- Shark → **fish** (class Chondrichthyes; breathes through gills).

Shark is the only non-mammal; it is a cartilaginous fish.

Why other options are wrong:

- Option A (Whale): marine mammal; belongs to the group.
- Option C (Dolphin): marine mammal; belongs to the group.
- Option D (Dugong): marine mammal; belongs to the group.

Final Answer: Shark (fish, not a mammal) ⇒ **B****Answer: (B)** [Go Back to Q 21](#)

Q22.

Solution**Concept — Classification by perfect squares:** All members except one are perfect squares (n^2 for integer n).**Step 1 — Check each:** $16 = 4^2$ ✓; $25 = 5^2$ ✓; $49 = 7^2$ ✓; For 35: $5^2 = 25$ and $6^2 = 36$, so 35 lies between two perfect squares and is **not** a perfect square.**Why other options are wrong:**

- Option A (16): $4^2 = 16$ — perfect square.
- Option B (25): $5^2 = 25$ — perfect square.
- Option D (49): $7^2 = 49$ — perfect square.

Final Answer: 35 is not a perfect square ⇒ **C****Answer: (C)** [Go Back to Q 22](#)

Q23.

Solution

Concept — Classification by type: musical instruments vs. electronic amplification device.

Step 1 — Categorise:

- Piano, Guitar, Violin → **musical instruments** that produce sound independently through strings or hammers.
- Microphone → an **electronic transducer** that captures and amplifies sound; it does not generate music on its own.

Why other options are wrong:

- Option B (Piano): a self-contained musical instrument; belongs.
- Option C (Guitar): a self-contained musical instrument; belongs.
- Option D (Violin): a self-contained musical instrument; belongs.

Final Answer: Microphone (not a musical instrument) ⇒ **A**

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

Q24.

Solution

Concept — Classification by coastal access:

Step 1 — Categorise:

- Maharashtra, Kerala, Goa → Indian states with a **coastline** (Arabian Sea / Indian Ocean).
- Rajasthan → **landlocked** state; shares no border with any sea or ocean.

Why other options are wrong:

- Option A (Maharashtra): has an extensive western coastline; belongs.
- Option B (Kerala): has the Malabar Coast; belongs.
- Option C (Goa): the entire western border is the Arabian Sea; belongs.

Final Answer: Rajasthan (landlocked) ⇒ **D**

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



Q25.

Solution

Concept — Classification: computing/programming terms vs. natural phenomenon.

Step 1 — Categorise:

- Algorithm, Bug, Syntax → **computing** terms (step-by-step procedure; software error; grammar rules of a programming language).
- Monsoon → a **seasonal wind and rainfall** pattern; a natural meteorological phenomenon, not a computing term.

Why other options are wrong:

- Option A (Algorithm): core computer science concept; belongs.
- Option C (Bug): programming error term; belongs.
- Option D (Syntax): grammar of a programming language; belongs.

Final Answer: Monsoon (natural phenomenon, not computing) ⇒ **B**

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

Q26.

Solution

Concept — Classification by recognised vitamins:

Step 1 — Check each:

- Vitamin A: recognised fat-soluble vitamin (retinol). ✓
- Vitamin B: recognised group of water-soluble vitamins (B1, B2, ... B12). ✓
- Vitamin K: recognised fat-soluble vitamin (phylloquinone). ✓
- Vitamin F: **not** an officially recognised vitamin; this designation is obsolete and was never formally adopted. Essential fatty acids (linoleic acid) were sometimes informally called “Vitamin F” but this is not accepted in modern nutrition.

Why other options are wrong:

- Option A (Vitamin A): an established vitamin; belongs.
- Option B (Vitamin B): an established vitamin group; belongs.
- Option D (Vitamin K): an established vitamin; belongs.



Final Answer: Vitamin F is not a recognised vitamin $\Rightarrow$ C

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

Q27.

Solution

Concept — Universal Affirmative Syllogism (Barbara form):

Step 1 — Map the statements:

- S1: All Birds $\subseteq$ Winged creatures.
- S2: Parrot $\in$ Birds.

Step 2 — Test conclusions:

- **Conclusion I** (Parrot has wings): Parrot $\in$ Birds $\subseteq$ Winged creatures $\Rightarrow$ Parrot has wings. **VALID** ✓
- **Conclusion II** (All winged creatures are birds): This is the *converse* of S1; not logically implied. (Bats, insects have wings but are not birds.) **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 $\Rightarrow$ A

Answer: (A) [Go Back to Q 27](#)

Q28.

Solution

Concept — Particular + Universal Affirmative Syllogism:

Step 1 — Map the statements:

- S1: Some Teachers are Kind $\Rightarrow$ Teachers $\cap$ Kind $\neq \emptyset$.
- S2: All Kind $\subseteq$ Respected.

Step 2 — Test conclusions:



- **Conclusion I** (All teachers are respected): Only *some* teachers are kind; the remaining teachers may not be respected. **INVALID** ×
- **Conclusion II** (Some teachers are respected): Those teachers who are kind $\subseteq$ Respected, so at least some teachers are respected. **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 chain syllogism (Barbara form):

Step 1 — Map the statements:

- S1: All Metals $\subseteq$ Conductors.
- S2: All Conductors $\subseteq$ Useful.

Step 2 — Chain: Metals $\subseteq$ Conductors $\subseteq$ Useful $\Rightarrow$ Metals $\subseteq$ Useful.

Step 3 — Test conclusions:

- **Conclusion I** (All metals are useful): Metals $\subseteq$ Useful (from chain). **VALID** ✓
- **Conclusion II** (Some useful things are metals): Metals is non-empty and all metals are useful, so metals form a non-empty subset of useful things. **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 — Universal Affirmative + Universal Negative (Celarent chain):****Step 1 — Map the statements:**

- S1: All Cats $\subseteq$ Felines.
- S2: No Feline is a Dog (Felines $\cap$ Dogs = $\emptyset$).

Step 2 — Test conclusions:

- **Conclusion I** (No cat is a dog): Cats $\subseteq$ Felines and Felines $\cap$ Dogs = $\emptyset$, so Cats $\cap$ Dogs = $\emptyset$. **VALID** ✓
- **Conclusion II** (All dogs are felines): This is the converse of S2's negation; not logically implied. Dogs could be an entirely separate set. **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 30](#)

Q31.

Solution**Concept — Particular + Universal Affirmative Syllogism:****Step 1 — Map the statements:**

- S1: Some Students are Athletes $\Rightarrow$ Students $\cap$ Athletes $\neq \emptyset$.
- S2: All Athletes $\subseteq$ Uniform-wearers.

Step 2 — Test conclusions:

- **Conclusion I** (All students wear uniforms): Only some students are athletes; non-athlete students need not wear uniforms. **INVALID** ×
- **Conclusion II** (Some students wear uniforms): Those students who are athletes $\subseteq$ Uniform-wearers, so at least some students wear uniforms. **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 (only daughter of father):

Step 1 — Trace the chain:

- “The only daughter of my father” = Suresh’s father’s only daughter = **Suresh’s sister.**
- Ramesh’s mother = Suresh’s sister.
- Therefore Ramesh is the **son of Suresh’s sister** = Suresh’s **nephew.**

Why other options are wrong:

- Option A (Brother): that would require Ramesh to be Suresh’s father’s son.
- Option B (Son): Ramesh is Suresh’s sister’s son, not Suresh’s own son.
- Option C (Uncle): an uncle is of an older generation; Ramesh is a generation below Suresh here.

Final Answer: Ramesh is Suresh’s Nephew $\Rightarrow$ **D**

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

Q33.

Solution

Concept — Blood relation chain (husband–wife–mother):

Step 1 — Trace the chain:

- X is Y’s husband $\Rightarrow$ Y is X’s wife.
- Y is Z’s mother $\Rightarrow$ Z is Y’s child.
- X (husband of Z’s mother) $\Rightarrow$ X is Z’s **father.**



Why other options are wrong:

- Option B (Uncle): X is Y's husband, the direct parent, not the sibling's spouse.
- Option C (Grandfather): that would require X to be one generation above Y, not a spouse.
- Option D (Brother): X is Y's husband, not her sibling.

Final Answer: X is Z's Father $\Rightarrow$ A

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

Q34.

Solution**Concept — Blood relation chain (sibling–daughter):****Step 1 — Trace the chain:**

- A's sister is B $\Rightarrow$ A and B are siblings; B is female.
- B's daughter is C $\Rightarrow$ B is C's mother.
- A is B's sibling (of the parental generation w.r.t. C).
- Therefore A is C's **maternal aunt** (mother's sister).

Why other options are wrong:

- Option A (Mother): B is C's mother, not A.
- Option B (Sister): A is one generation above C; a sibling relationship requires the same generation.
- Option C (Cousin): cousins share grandparents; A and C share no such link.

Final Answer: A is C's Maternal Aunt $\Rightarrow$ D

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



Q35.

Solution**Concept — Direction tracing with Pythagoras theorem:****Step 1 — Trace the path:**

- Walks 3 km North $\Rightarrow$ displacement $(0, +3)$.
- Walks 4 km East $\Rightarrow$ displacement $(+4, 0)$.
- End position relative to start: $(4, 3)$.

Step 2 — Straight-line distance:

$$d = \sqrt{4^2 + 3^2} = \sqrt{16 + 9} = \sqrt{25} = 5 \text{ km}$$

Why other options are wrong:

- Option A (7 km): $3 + 4 = 7$, the total path length, not the straight-line distance.
- Option B (6 km): incorrect Pythagorean calculation.
- Option D (4 km): only the East component.

Final Answer: $d = 5 \text{ km} \Rightarrow$ CAnswer: (C) [Go Back to Q 35](#)

Q36.

Solution**Concept — Compass turn (clockwise rotation):****Step 1 — Apply the turn rule:**

- Clockwise rotation by 90° : North $\rightarrow$ East $\rightarrow$ South $\rightarrow$ West $\rightarrow$ North.
- Starting direction: East. After 90° clockwise: **South**.

Step 2 — Verify: East is at angle 0° . Clockwise by $90^\circ = 0^\circ - 90^\circ = -90^\circ$ (or 270°) $\Rightarrow$ South. $\checkmark$ **Why other options are wrong:**

- Option A (East): no turn applied.
- Option C (West): requires a 180° turn.



- Option D (North): requires a 90° counter-clockwise turn.

Final Answer: After 90° CW from East = South $\Rightarrow$ **B**

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

Q37.

Solution

Concept — Cube-net folding to find opposite faces:

Step 1 — Read the T-shaped net: The net has a vertical column of four faces (from bottom): 5($y=0$), 6($y=1$), 2($y=2$), 1($y=3$), plus two wings: 3(left of face 2) and 4(right of face 2).

Step 2 — Fold the vertical strip: In a strip of 4 faces, positions 1 and 3 are opposite, positions 2 and 4 are opposite (counting from bottom):

- Position 1 (face 5) is opposite position 3 (face 2): so **5 is opposite 2**. ✓
- Position 2 (face 6) is opposite position 4 (face 1): so 6 is opposite 1.
- Wings 3 and 4 are opposite each other.

Why other options are wrong:

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

Final Answer: Face opposite to 2 = 5 $\Rightarrow$ **D**

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

Q38.

Solution

Concept — Painted $2 \times 2 \times 2$ cube analysis:

Step 1 — Analyse positions: A $2 \times 2 \times 2$ cube cut into 8 equal unit cubes has **only** corner cubes. In a $2 \times 2 \times 2$ arrangement there are no edge-only or face-center or interior cubes. Every single unit cube occupies a corner of the large cube.

Step 2 — Painted faces per unit cube: Each corner cube has exactly **3** faces exposed (and painted), one for each of the three mutually perpendicular outer



faces at its corner.

Step 3 — Count: All 8 unit cubes are corner cubes $\Rightarrow$ all 8 have exactly 3 painted faces.

Why other options are wrong:

- Option A (2): no unit cube has fewer than 3 painted faces in a $2 \times 2 \times 2$ cube.
- Option B (4): half of 8; but all 8 are corners, not half.
- Option D (6): this would apply to the number of faces of a single cube, not the count of small cubes.

Final Answer: All 8 small cubes have exactly 3 painted faces $\Rightarrow$ C

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

Q39.

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 4:

$$4 + \text{opposite face} = 7 \Rightarrow \text{opposite face} = 3$$

Face 4 is on top; therefore the bottom face = 3.

Why other options are wrong:

- Option B (4): the same face as the top; a face cannot be opposite to itself.
- Option C (5): 5 is opposite to 2, not to 4.
- Option D (6): 6 is opposite to 1, not to 4.

Final Answer: Bottom face = 3 $\Rightarrow$ A

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



Q40.

Solution

Concept — Figure matrix: count increases left-to-right; shape is constant across each row.

Step 1 — Identify column pattern (count):

- Column 1: always 1 figure. Column 2: always 2 figures. Column 3: always 3 figures.

Step 2 — Identify row pattern (shape):

- Row 1 (top): circles (○). Row 2 (middle): triangles (△). Row 3 (bottom): stars (★).

Step 3 — Missing cell: Row 3 (stars), Column 3 (count = 3) $\Rightarrow$ **3 stars**.

Why other options are wrong:

- Option A (1 star): count should be 3 in column 3, not 1.
- Option B (2 triangles): Row 3 uses stars, not triangles; also count should be 3.
- Option C (3 circles): Row 3 uses stars, not circles.

Final Answer: 3 stars $\Rightarrow$ D

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



Answer Key

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

