

MAH BEd CET — Mental Ability

Sample Paper – 8

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, 4, 3, 9, 5, 16, 7, ____

- (A) 21
- (B) 22
- (C) 24
- (D) 25

Q2. Find the missing term in the series:

5, 10, 9, 18, 17, 34, 33, ____

- (A) 64
- (B) 66
- (C) 62
- (D) 68



Q3. Find the missing term in the series:

1, 2, 4, 7, 11, 16, ____

- (A) 20
- (B) 21
- (C) 22
- (D) 24

Q4. Find the missing letter in the series:

C, F, I, L, O, ____

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

Q5. Find the next term in the series:

1, 8, 27, 64, 125, ____

- (A) 180
- (B) 196
- (C) 200
- (D) 216

Q6. Find the missing pair in the series:

AB, CD, EF, GH, ____

- (A) HI
- (B) IJ
- (C) JK
- (D) KL



Q7. Find the next term in the series:

2, 6, 24, 120, 720, ____

- (A) 3600
- (B) 4320
- (C) 5040
- (D) 5280

Q8. Choose the word that best completes the analogy:

Cow : Calf :: Sheep : ____

- (A) Lamb
- (B) Kid
- (C) Pup
- (D) Foal

Q9. Choose the word that best completes the analogy:

Eye : See :: Ear : ____

- (A) Smell
- (B) Touch
- (C) Taste
- (D) Hear

Q10. Choose the number that best completes the analogy:

Triangle : 3 :: Pentagon : ____

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

Q11. Choose the option that best completes the analogy:

Day : 24 hours :: Week : ____



- (A) 5 days
- (B) 6 days
- (C) 7 days
- (D) 8 days

Q12. Choose the word that best completes the analogy:

Tree : Rubber :: Sand : ____

- (A) Glass
- (B) Wood
- (C) Brick
- (D) Cement

Q13. Choose the word that best completes the analogy:

MD : Medicine :: LLB : ____

- (A) Engineering
- (B) Commerce
- (C) Science
- (D) Law

Q14. Choose the word that best completes the analogy:

Rice : Carbohydrate :: Paneer : ____

- (A) Vitamin
- (B) Protein
- (C) Fat
- (D) Fibre

Q15. If BIRD is coded as HOXJ (each letter shifted +6), then OPEN is coded as ____

- (A) TUJQ
- (B) VWLM
- (C) UVKT



(D) WVLS

Q16. Using ROT-13 (each letter shifted by +13, wrapping around the alphabet), HELLO is coded as URYYB. What is the code for WORLD?

(A) JBEYQ

(B) IBDXP

(C) JCDYQ

(D) KBFZR

Q17. If ACE is coded as 9 (sum of letter positions: A=1, C=3, E=5, so $1+3+5 = 9$), then what is the code for GHI?

(A) 20

(B) 21

(C) 22

(D) 24

Q18. If STAR is coded as RATS (letters written in reverse order), then MOON is coded as ____

(A) MOON

(B) NOOM

(C) MONO

(D) OMON

Q19. If each letter of the word is shifted forward by its position number (1st letter +1, 2nd letter +2, 3rd letter +3, 4th letter +4), then FISH is coded as ____

(A) GJVL

(B) GKVK

(C) GKVL

(D) HJVM



Q20. Using the letter-number code A=1, B=2, C=3, ..., Z=26, the number sequence **19, 1, 14, 4** represents the word _____

- (A) SAND
- (B) BAND
- (C) LAND
- (D) HAND

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

Delhi Mumbai Kolkata London

- (A) Delhi
- (B) Mumbai
- (C) Kolkata
- (D) London

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

Cube Sphere Circle Cylinder

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

Q23. Which one does **NOT** belong to the group of **primary colours**?

Red Blue Green Yellow

- (A) Red
- (B) Blue
- (C) Green
- (D) Yellow

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

$$\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{2}{3}, \frac{4}{8}$$



- (A) $\frac{2}{3}$
(B) $\frac{1}{2}$
(C) $\frac{4}{8}$
(D) $\frac{2}{4}$

Q25. Which one is **NOT** a sense organ?

Eye Ear Nose Bone

- (A) Eye
(B) Ear
(C) Nose
(D) Bone

Q26. Which one is **NOT** a programming language?

Python HTML Java C++

- (A) Python
(B) HTML
(C) Java
(D) C++

Q27. Statements:

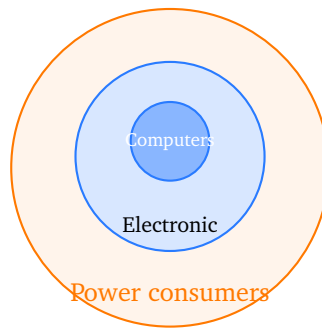
(1) All computers are electronic. (2) All electronic items consume power.

Conclusions:

I. All computers consume power. II. Some power-consuming items are computers.

Which conclusion(s) follow?





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

Q28. Statements:

(1) All doctors wear white coats. (2) Raj is a doctor.

Conclusions:

I. Raj wears a white coat. II. All who wear white coats are doctors.

Which conclusion(s) follow?

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

Q29. Statements:

(1) Some cars are red. (2) Some red things are beautiful.

Conclusions:

I. Some cars are beautiful. II. All beautiful things are red.

Which conclusion(s) follow?

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



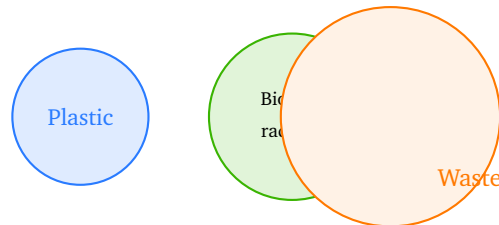
Q30. Statements:

(1) No plastic is biodegradable. (2) Some waste is biodegradable.

Conclusions:

I. No waste is plastic. II. Some waste is not plastic.

Which conclusion(s) follow?



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

Q31. Statements:

(1) All planets are in the solar system. (2) Mercury is a planet.

Conclusions:

I. Mercury is in the solar system. II. Some solar-system members are planets.

Which conclusion(s) follow?

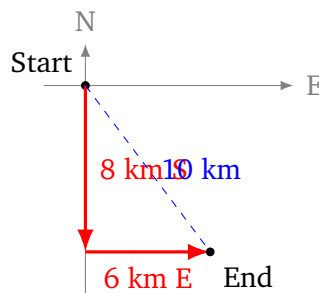
- (A) Only I
- (B) Only II
- (C) Both I and II
- (D) Neither

Q32. A and B are siblings. C is A's son. D is B's daughter. What is C's relationship to D?

- (A) Cousins
- (B) Siblings
- (C) Nephew-Niece
- (D) Strangers

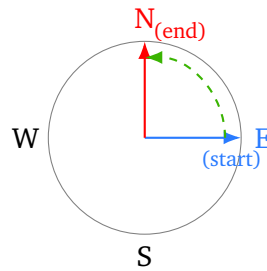


- Q33.** P is the son of Q. Q is the daughter of R. How is P related to R?
- (A) Son
(B) Nephew
(C) Brother
(D) Grandson
- Q34.** A woman points to a man and says, “He is the son of my grandfather’s only son.” How is the man related to the woman?
- (A) Father
(B) Brother
(C) Cousin
(D) Uncle
- Q35.** A person walks 8 km South, then turns and walks 6 km East. What is the straight-line distance from the starting point?



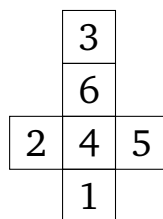
- (A) 12 km
(B) 8 km
(C) 10 km
(D) 14 km
- Q36.** A person is facing **East**. He turns 90° anti-clockwise. In which direction is he now facing?





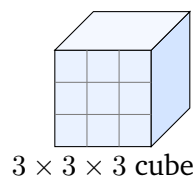
- (A) North
- (B) South
- (C) East
- (D) West

Q37. The cross-shaped net below is folded to form a cube. Which face is **opposite** to face 4?



- (A) 1
- (B) 2
- (C) 6
- (D) 3

Q38. A $3 \times 3 \times 3$ cube is painted on all six outer faces and then cut into 27 equal smaller cubes. How many smaller cubes have **no face** painted?



- (A) 0
- (B) 1
- (C) 3
- (D) 6



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

1	2	3
4	5	6
7	8	?

- (A) 7
- (B) 8
- (C) 9
- (D) 10

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

●	●●	●●●
□	□□	□□□
★	★★	?

- (A) ★★★
- (B) ●●
- (C) □□□
- (D) ★★



Detailed Solutions

Q1.

Solution

Concept — Two interleaved series (odd numbers and perfect squares): The series combines two independent subsequences placed at alternating positions.

Step 1 — Separate the two subsequences:

- Odd positions (1st, 3rd, 5th, 7th): 1, 3, 5, 7 (consecutive odd numbers, each +2).
- Even positions (2nd, 4th, 6th, 8th): 4, 9, 16, ? (perfect squares: $2^2, 3^2, 4^2, 5^2$).

Step 2 — Find the next even-position term: The 8th position is even, so the next square after $4^2 = 16$ is $5^2 = 25$.

Why other options are wrong:

- Option A (21): not a perfect square.
- Option B (22): not a perfect square.
- Option C (24): not a perfect square.

Final Answer: $5^2 = 25 \Rightarrow$ D

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

Q2.

Solution

Concept — Alternating $\times 2$ then -1 series: The rule alternates between multiplying by 2 and subtracting 1.

Step 1 — Verify the pattern:

$$5 \xrightarrow{\times 2} 10 \xrightarrow{-1} 9 \xrightarrow{\times 2} 18 \xrightarrow{-1} 17 \xrightarrow{\times 2} 34 \xrightarrow{-1} 33 \xrightarrow{\times 2} ?$$

Step 2 — Apply next operation: After subtracting to get 33, the next step is $\times 2$: $33 \times 2 = 66$.

Why other options are wrong:

- Option A (64): $33 + 31$, no rule.
- Option C (62): $33 \times 2 - 4$, wrong operation.



- Option D (68): $33 \times 2 + 2$, wrong operation.

Final Answer: $33 \times 2 = 66 \Rightarrow$ B

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

Q3.

Solution

Concept — Second-differences series: The differences between terms themselves form a regular sequence.

Step 1 — Find the first differences:

$$2 - 1 = 1, \quad 4 - 2 = 2, \quad 7 - 4 = 3, \quad 11 - 7 = 4, \quad 16 - 11 = 5$$

First differences: 1, 2, 3, 4, 5 (increasing by 1 each time).

Step 2 — Apply next difference: The next difference is 6, so the missing term $= 16 + 6 = 22$.

Why other options are wrong:

- Option A (20): gap of 4, repeating a previous difference.
- Option B (21): gap of 5, repeating the last gap.
- Option D (24): gap of 8, skipping two steps.

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

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

Q4.

Solution

Concept — Alphabetic series with constant step of +3: Each successive letter is 3 positions ahead in the alphabet.

Step 1 — Verify the pattern:

$$C(3) \xrightarrow{+3} F(6) \xrightarrow{+3} I(9) \xrightarrow{+3} L(12) \xrightarrow{+3} O(15) \xrightarrow{+3} ?$$

Step 2 — Apply next step: $O(15) + 3 = 18 = R$.

Why other options are wrong:



- Option B (S): position 19 (+4 from O), wrong step.
- Option C (T): position 20 (+5 from O), wrong step.
- Option D (Q): position 17 (+2 from O), wrong step.

Final Answer: Position $15 + 3 = 18 = R \Rightarrow \boxed{A}$

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

Q5.

Solution

Concept — Perfect cubes series: Each term is the cube of a natural number (n^3).

Step 1 — Identify the pattern:

$$1^3 = 1, \quad 2^3 = 8, \quad 3^3 = 27, \quad 4^3 = 64, \quad 5^3 = 125$$

Step 2 — Find the next term: $6^3 = 6 \times 6 \times 6 = 216$.

Why other options are wrong:

- Option A (180): not a perfect cube.
- Option B (196): 14^2 , a perfect square but not a cube.
- Option C (200): not a perfect cube.

Final Answer: $6^3 = 216 \Rightarrow \boxed{D}$

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

Q6.

Solution

Concept — Consecutive letter-pair series: Each term is a pair of consecutive alphabet letters; successive pairs skip no letters.

Step 1 — Identify the pattern:

AB, CD, EF, GH, ?

Each pair consists of the next two consecutive letters: AB (1-2), CD (3-4), EF (5-6), GH (7-8), next = IJ (9-10).

Why other options are wrong:



- Option A (HI): H is already the last letter of GH, creating an overlap.
- Option C (JK): skips letter I entirely.
- Option D (KL): skips letters I and J.

Final Answer: Next pair = IJ $\Rightarrow$ B

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

Q7.

Solution

Concept — Factorial series: Each term is a factorial ($n!$).

Step 1 — Identify the pattern:

$$2! = 2, \quad 3! = 6, \quad 4! = 24, \quad 5! = 120, \quad 6! = 720$$

Step 2 — Find the next term: $7! = 7 \times 720 = 5040$.

Why other options are wrong:

- Option A (3600): $6! \times 5 = 3600$, wrong multiplier.
- Option B (4320): $720 \times 6 = 4320$, applies the wrong ratio.
- Option D (5280): $720 \times 7.33 \dots$, not a factorial.

Final Answer: $7! = 5040 \Rightarrow$ C

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

Q8.

Solution

Concept — Animal:Young-one analogy: Each animal is paired with the specific name for its young.

Step 1 — Identify the relationship: Cow $\rightarrow$ young one is called a **Calf**. Sheep $\rightarrow$ young one is called a **Lamb**.

Why other options are wrong:

- Option B (Kid): the young one of a goat, not a sheep.
- Option C (Pup): the young one of a dog or seal.
- Option D (Foal): the young one of a horse.



Final Answer: Sheep → Lamb ⇒ A

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

Q9.

Solution

Concept — Sense organ:Function analogy: Each sense organ is paired with its primary sensory function.

Step 1 — Identify the relationship: Eye → function is to **See** (vision). Ear → function is to **Hear** (audition).

Why other options are wrong:

- Option A (Smell): function of the nose, not the ear.
- Option B (Touch): function of skin receptors, not the ear.
- Option C (Taste): function of taste buds/tongue, not the ear.

Final Answer: Ear → Hear ⇒ D

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

Q10.

Solution

Concept — Polygon:Number-of-sides analogy: Each polygon name is paired with its count of sides.

Step 1 — Identify the relationship: Triangle → 3 sides. Pentagon → 5 sides (the prefix *penta-* means five).

Why other options are wrong:

- Option A (4): that is a quadrilateral (tetra-).
- Option C (6): that is a hexagon (hexa-).
- Option D (7): that is a heptagon (hepta-).

Final Answer: Pentagon → 5 ⇒ B

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



Q11.

Solution

Concept — Time unit analogy: Each time unit is paired with the number of a smaller unit it contains.

Step 1 — Identify the relationship: Day → 24 hours. Week → 7 days (a standard week has exactly 7 days).

Why other options are wrong:

- Option A (5 days): a working week, not the actual length of a week.
- Option B (6 days): incorrect; a week always has 7 days.
- Option D (8 days): more than a standard week.

Final Answer: Week → 7 days ⇒

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

Q12.

Solution

Concept — Raw material:Product analogy: Each natural source is paired with an important product derived from it.

Step 1 — Identify the relationship: Tree (rubber tree) → Rubber (latex extracted from *Hevea brasiliensis*). Sand (silica) → **Glass** (glass is manufactured by melting silica sand at high temperature).

Why other options are wrong:

- Option B (Wood): derived from trees, not sand.
- Option C (Brick): made from clay, not sand.
- Option D (Cement): made from limestone, not sand.

Final Answer: Sand → Glass ⇒

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



Q13.

Solution

Concept — Degree abbreviation:Field of study analogy: Each professional degree is paired with the discipline it belongs to.

Step 1 — Identify the relationship: MD (Doctor of Medicine) → field is **Medicine**. LLB (Bachelor of Laws, from *Legum Baccalaureus*) → field is **Law**.

Why other options are wrong:

- Option A (Engineering): degree would be B.E./B.Tech, not LLB.
- Option B (Commerce): degree would be B.Com, not LLB.
- Option C (Science): degree would be B.Sc, not LLB.

Final Answer: LLB → Law ⇒ D

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

Q14.

Solution

Concept — Food:Primary nutrient analogy: Each food item is paired with the macronutrient it is primarily rich in.

Step 1 — Identify the relationship: Rice → Carbohydrate (starch). Paneer (Indian cottage cheese) → **Protein** (paneer is a high-protein dairy product).

Why other options are wrong:

- Option A (Vitamin): paneer is not primarily a vitamin source.
- Option C (Fat): while paneer contains fat, protein is its defining macronutrient analogous to rice/carbohydrate.
- Option D (Fibre): paneer contains negligible dietary fibre.

Final Answer: Paneer → Protein ⇒ B

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



Q15.

Solution

Concept — Letter-shift coding (+6): Each letter is replaced by the letter 6 positions ahead in the alphabet.

Step 1 — Verify with BIRD: $B(2)+6=H(8)$, $I(9)+6=O(15)$, $R(18)+6=X(24)$, $D(4)+6=J(10) \Rightarrow HOXJ \checkmark$

Step 2 — Apply to OPEN: $O(15)+6=U(21)$, $P(16)+6=V(22)$, $E(5)+6=K(11)$, $N(14)+6=T(20) \Rightarrow UVKT$

Why other options are wrong:

- Option A (TUJQ): $T=20$, but $O+6=U(21)$; wrong first letter.
- Option B (VWLM): $V=22$, but $O+6=U(21)$; wrong first letter.
- Option D (WVLS): $W=23$, but $O+6=U(21)$; wrong first letter.

Final Answer: OPEN $\rightarrow$ UVKT $\Rightarrow$ C

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

Q16.

Solution

Concept — ROT-13 coding: Each letter is shifted by 13 positions; letters wrap around when they pass Z.

Step 1 — Verify with HELLO: $H(8)+13=U(21)$, $E(5)+13=R(18)$, $L(12)+13=Y(25)$, $L(12)+13=Y(25)$, $O(15)+13=28 \rightarrow 28-26=2=B \Rightarrow URY YB \checkmark$

Step 2 — Apply to WORLD:

- $W(23)+13=36 \rightarrow 36-26=10=J$
- $O(15)+13=28 \rightarrow 28-26=2=B$
- $R(18)+13=31 \rightarrow 31-26=5=E$
- $L(12)+13=25=Y$
- $D(4)+13=17=Q$

WORLD $\Rightarrow$ JBEYQ

Why other options are wrong:

- Option B (IBDXP): $I=9$, but $W+13=J(10)$; wrong first letter.
- Option C (JCDYQ): $C=3$, but $O+13=B(2)$; wrong second letter.



- Option D (KBFZR): $K=11$, but $W+13=J(10)$; wrong first letter.

Final Answer: WORLD $\rightarrow$ JBEYQ $\Rightarrow$ A

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

Q17.

Solution

Concept — Letter-position sum coding: The code for a word is the sum of the alphabetic positions of its letters.

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

Step 2 — Apply to GHI: $G=7, H=8, I=9 \Rightarrow 7 + 8 + 9 = 24$

Why other options are wrong:

- Option A (20): $7 + 8 + 5 = 20$, incorrect; $I=9$ not 5.
- Option B (21): $6 + 7 + 8 = 21$, uses positions for F, G, H instead of G, H, I.
- Option C (22): $7 + 6 + 9 = 22$, one position is wrong.

Final Answer: $G+H+I = 7 + 8 + 9 = 24 \Rightarrow$ D

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

Q18.

Solution

Concept — Word-reversal coding: The code is obtained by writing the letters of the word in reverse order.

Step 1 — Verify with STAR: S-T-A-R reversed $\Rightarrow$ R-A-T-S = RATS $\checkmark$

Step 2 — Apply to MOON: M-O-O-N reversed $\Rightarrow$ N-O-O-M = NOOM

Why other options are wrong:

- Option A (MOON): the original word, no reversal applied.
- Option C (MONO): letters rearranged, not a strict reversal.
- Option D (OMON): first letter changed, not a reversal of MOON.

Final Answer: MOON reversed = NOOM $\Rightarrow$ B

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



Q19.

Solution

Concept — Shift-by-position coding: Each letter is shifted forward by a number equal to its position in the word (1st letter +1, 2nd letter +2, etc.).

Step 1 — Apply to FISH:

- F(6) is at position 1: $6 + 1 = 7 = G$
- I(9) is at position 2: $9 + 2 = 11 = K$
- S(19) is at position 3: $19 + 3 = 22 = V$
- H(8) is at position 4: $8 + 4 = 12 = L$

FISH $\Rightarrow$ GKVL

Why other options are wrong:

- Option A (GJVL): J=10, but I+2=K(11); second letter wrong.
- Option B (GKVK): K=11, but H+4=L(12); last letter wrong.
- Option D (HJVM): H=8, but F+1=G(7); first letter wrong.

Final Answer: FISH $\rightarrow$ GKVL $\Rightarrow$ C

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

Q20.

Solution

Concept — Number-to-letter decoding: Each number represents the alphabetic position of the corresponding letter (A=1, B=2, ..., Z=26).

Step 1 — Decode 19, 1, 14, 4:

- 19 = S 1 = A 14 = N 4 = D

The word is **SAND**.

Why other options are wrong:

- Option B (BAND): B=2, but the first number is 19 (S), not 2.
- Option C (LAND): L=12, but the first number is 19 (S), not 12.
- Option D (HAND): H=8, but the first number is 19 (S), not 8.

Final Answer: 19,1,14,4 = SAND $\Rightarrow$ A

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



Q21.

Solution**Concept — Classification by country:****Step 1 — Categorise:**

- Delhi, Mumbai, Kolkata → **Indian** cities (metropolitan cities of India).
- London → capital city of the **United Kingdom**; not in India.

Why other options are wrong:

- Option A (Delhi): capital of India; belongs.
- Option B (Mumbai): financial capital of India; belongs.
- Option C (Kolkata): major Indian city; belongs.

Final Answer: London (not an Indian city) ⇒ **D****Answer: (D)** [Go Back to Q 21](#)

Q22.

Solution**Concept — Classification by number of dimensions (3D vs 2D):****Step 1 — Categorise:**

- Cube, Sphere, Cylinder → **3-dimensional** (solid) shapes.
- Circle → a **2-dimensional** (flat) shape; it has no depth.

Why other options are wrong:

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

Final Answer: Circle (2D shape) ⇒ **B****Answer: (B)** [Go Back to Q 22](#)

Q23.

Solution

Concept — Classification by primary vs secondary colour (traditional RYB model):

Step 1 — Categorise:

- Red, Blue, Yellow → **primary** colours (cannot be made by mixing other colours).
- Green → a **secondary** colour (Blue + Yellow = Green in the RYB model).

Why other options are wrong:

- Option A (Red): primary colour; belongs.
- Option B (Blue): primary colour; belongs.
- Option D (Yellow): primary colour; belongs.

Final Answer: Green (secondary colour) ⇒ C

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

Q24.

Solution

Concept — Classification by equivalent fractions:

Step 1 — Evaluate each fraction:

- $\frac{1}{2} = 0.5$, $\frac{2}{4} = 0.5$, $\frac{3}{6} = 0.5$, $\frac{4}{8} = 0.5$ — all equal $\frac{1}{2}$.
- $\frac{2}{3} \approx 0.667$ — does **not** equal $\frac{1}{2}$.

Why other options are wrong:

- Option B ($\frac{1}{2}$): equals $\frac{1}{2}$; belongs.
- Option C ($\frac{4}{8}$): = $\frac{1}{2}$; belongs.
- Option D ($\frac{2}{4}$): = $\frac{1}{2}$; belongs.

Final Answer: $\frac{2}{3}$ is the odd one out ⇒ A

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



Q25.

Solution**Concept — Classification by biological function (sense organs):****Step 1 — Categorise:**

- Eye, Ear, Nose → **sense organs** (specialised organs for vision, hearing, and smell respectively).
- Bone → a structural organ of the **skeletal system**; not a sense organ.

Why other options are wrong:

- Option A (Eye): sense organ of sight; belongs.
- Option B (Ear): sense organ of hearing; belongs.
- Option C (Nose): sense organ of smell; belongs.

Final Answer: Bone (not a sense organ) ⇒ **D****Answer: (D)** [Go Back to Q 25](#)

Q26.

Solution**Concept — Classification by language type (programming vs markup):****Step 1 — Categorise:**

- Python, Java, C++ → **programming languages** (Turing-complete; used to write algorithms and applications).
- HTML → a **markup language** (HyperText Markup Language; used to structure web content, not to program logic).

Why other options are wrong:

- Option A (Python): general-purpose programming language; belongs.
- Option C (Java): object-oriented programming language; belongs.
- Option D (C++): systems programming language; belongs.

Final Answer: HTML (markup, not a programming language) ⇒ **B****Answer: (B)** [Go Back to Q 26](#)

Q27.

Solution

Concept — Universal chain syllogism (Barbara form): All $A \subseteq B$ and All $B \subseteq C$ implies All $A \subseteq C$.

Step 1 — Map the statements:

- S1: All Computers $\subseteq$ Electronic items.
- S2: All Electronic items $\subseteq$ Power consumers.

Step 2 — Test conclusions:

- **Conclusion I** (All computers consume power): Computers $\subseteq$ Electronic $\subseteq$ Power consumers $\Rightarrow$ Computers $\subseteq$ Power consumers. **VALID** ✓
- **Conclusion II** (Some power consumers are computers): Computers are a non-empty subset of power consumers, so some power consumers are indeed computers. **VALID** ✓

Why other options are wrong:

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

Final Answer: Both Conclusions follow $\Rightarrow$ C

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

Q28.

Solution

Concept — Universal Affirmative + Individual Syllogism (Barbara):

Step 1 — Map the statements:

- S1: All Doctors $\subseteq$ White-coat wearers.
- S2: Raj $\in$ Doctors.

Step 2 — Test conclusions:

- **Conclusion I** (Raj wears a white coat): Raj $\in$ Doctors $\subseteq$ White-coat wearers $\Rightarrow$ Raj wears a white coat. **VALID** ✓



- **Conclusion II** (All who wear white coats are doctors): This is the *converse* of S1; the converse of a universal affirmative is not logically valid. Nurses, lab technicians etc. also wear white coats. **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 28](#)

Q29.

Solution

Concept — Particular + Particular yields no definite conclusion: When both premises are particular (“some”), no universal or cross-set particular conclusion is guaranteed.

Step 1 — Map the statements:

- S1: Some Cars are Red ($\text{Cars} \cap \text{Red} \neq \emptyset$).
- S2: Some Red things are Beautiful ($\text{Red} \cap \text{Beautiful} \neq \emptyset$).

Step 2 — Test conclusions:

- **Conclusion I** (Some cars are beautiful): The red cars and the red-beautiful things may be entirely different members of the “red” set; there is no guarantee that any car is also beautiful. **INVALID** ×
- **Conclusion II** (All beautiful things are red): Far too strong; nothing in the premises supports this. **INVALID** ×

Why other options are wrong:

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

Final Answer: Neither conclusion follows $\Rightarrow$ **D**

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



Q30.

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

- S1: No Plastic is Biodegradable ($\text{Plastic} \cap \text{Biodegradable} = \emptyset$).
- S2: Some Waste is Biodegradable ($\text{Waste} \cap \text{Biodegradable} \neq \emptyset$).

Step 2 — Test conclusions:

- **Conclusion I** (No waste is plastic): The premises do not constrain Waste vs Plastic directly; there can be non-biodegradable waste that is also plastic. **INVALID** ×
- **Conclusion II** (Some waste is not plastic): The biodegradable portion of waste (from S2) is definitely not plastic (from S1, $\text{Plastic} \cap \text{Biodegradable} = \emptyset$). So that biodegradable waste is “not plastic”, meaning some waste is not plastic. **VALID** ✓

Why other options are wrong:

- Option A (Only I): I does not necessarily 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 30](#)

Q31.

Solution**Concept — Universal Affirmative + Individual Syllogism (Barbara):****Step 1 — Map the statements:**

- S1: All Planets $\subseteq$ Solar system.
- S2: Mercury $\in$ Planets.

Step 2 — Test conclusions:

- **Conclusion I** (Mercury is in the solar system): Mercury $\in$ Planets $\subseteq$ Solar system $\Rightarrow$ Mercury $\in$ Solar system. **VALID** ✓



- **Conclusion II** (Some solar-system members are planets): Mercury is a planet and is in the solar system, so planets form a non-empty subset of the solar system. **VALID** ✓

Why other options are wrong:

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

Final Answer: Both Conclusions follow $\Rightarrow$

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

Q32.

Solution

Concept — Blood relation chain (children of siblings are cousins):

Step 1 — Trace the chain:

- A and B are siblings (brother/sister).
- C is A's son $\Rightarrow$ C is a child of A.
- D is B's daughter $\Rightarrow$ D is a child of B.
- Since A and B are siblings, their children (C and D) are **cousins**.

Why other options are wrong:

- Option B (Siblings): they would need the same parent, but C's parent is A and D's parent is B.
- Option C (Nephew-Niece): that would require one of them to be a sibling of the other's parent.
- Option D (Strangers): they are related through their parents being siblings.

Final Answer: C and D are Cousins $\Rightarrow$

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



Q33.

Solution**Concept — Blood relation chain (son of daughter = grandson):****Step 1 — Trace the chain:**

- P is the son of Q $\Rightarrow$ Q is P's mother.
- Q is the daughter of R $\Rightarrow$ R is Q's parent (father or mother).
- R is one generation above Q, and Q is one generation above P.
- Therefore R is **two generations above P** $\Rightarrow$ P is R's **grandson**.

Why other options are wrong:

- Option A (Son): P is two generations below R, not one.
- Option B (Nephew): no sibling relation exists in the chain.
- Option C (Brother): P and R are not in the same generation.

Final Answer: P is R's Grandson $\Rightarrow$ **D****Answer: (D)** [Go Back to Q 33](#)

Q34.

Solution**Concept — Blood relation through pointing statement:****Step 1 — Decode the statement:**

- "My grandfather's only son" = the woman's own **father** (since her grandfather had only one son).
- The man is "the son of my grandfather's only son" = the son of her father = her **brother**.

Why other options are wrong:

- Option A (Father): the man is the son of her father, not her father himself.
- Option C (Cousin): that would require a different grandfather's branch.
- Option D (Uncle): an uncle would be her father's brother, not her father's son.

Final Answer: The man is the woman's Brother $\Rightarrow$ **B****Answer: (B)** [Go Back to Q 34](#)

Q35.

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

- Start at origin (0, 0).
- Walk 8 km South $\Rightarrow$ reach (0, -8).
- Walk 6 km East $\Rightarrow$ reach (6, -8).

Step 2 — Calculate straight-line distance:

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

(This is a 3-4-5 Pythagorean triple scaled by 2: 6-8-10.)

Why other options are wrong:

- Option A (12 km): $\sqrt{144}$; no 8-6 right triangle gives 12.
- Option B (8 km): just the southward displacement.
- Option D (14 km): $\sqrt{196}$; no 8-6 right triangle gives 14.

Final Answer: $d = 10 \text{ km} \Rightarrow$ CAnswer: (C) [Go Back to Q 35](#)

Q36.

Solution**Concept — Direction after a turn:****Step 1 — Apply the turn:** Starting direction = **East**. A 90° anti-clockwise (left) turn from East gives **North**.**Step 2 — Verify using compass:** Anti-clockwise from East: East $\rightarrow$ North $\rightarrow$ West $\rightarrow$ South (each 90° step). One step of 90° anti-clockwise from East = **North**. ✓**Why other options are wrong:**

- Option B (South): that would be a 90° *clockwise* turn from East.
- Option C (East): no turn taken; original direction.
- Option D (West): that would be a 180° turn from East.

Final Answer: Facing North after the turn $\Rightarrow$ A

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

Q37.

Solution

Concept — Cube-net folding to find opposite faces:

Step 1 — Read the net layout:

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

Step 2 — Determine opposite pairs when folded:

- Face 4 (centre of cross) → **bottom**; face 3 (top of vertical strip, two steps away) → **top** ⇒ **3 is opposite 4**.
- Face 6 (one above 4) → front; face 1 (one below 4) → back ⇒ 6 is opposite 1.
- Face 2 (left) → left side; face 5 (right) → right side ⇒ 2 is opposite 5.

Why other options are wrong:

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

Final Answer: Face opposite to 4 = 3 ⇒ **D**

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

Q38.

Solution

Concept — Painted cube analysis (0 painted faces): When a $3 \times 3 \times 3$ cube is painted on all faces and cut into 27 equal smaller cubes, only the innermost cube is completely surrounded and has no painted face.

Step 1 — Classify the 27 smaller cubes by position:

- **Corner** cubes (3 faces painted): 8 cubes.
- **Edge-centre** cubes (2 faces painted): 12 cubes.
- **Face-centre** cubes (1 face painted): 6 cubes.



- **Inner/core** cube (0 faces painted): **1 cube** (the single cube at the very centre, hidden on all sides).

Total: $8 + 12 + 6 + 1 = 27$ ✓

Why other options are wrong:

- Option A (0): there is indeed one core cube with 0 painted faces.
- Option C (3): no group of 3 corresponds to 0-painted-face cubes.
- Option D (6): 6 is the count of face-centre cubes (1 painted face).

Final Answer: 1 cube has no face painted $\Rightarrow$ **B**

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

Q39.

Solution

Concept — Number matrix with consecutive integers: The matrix is filled with consecutive natural numbers reading row by row from left to right, top to bottom.

Step 1 — Read the matrix:

1	2	3
4	5	6
7	8	?

Step 2 — Identify the pattern: The numbers are simply 1, 2, 3, ... placed left-to-right, top-to-bottom. The 9th position (row 3, column 3) must be 9.

Why other options are wrong:

- Option A (7): already present at row 3, column 1.
- Option B (8): already present at row 3, column 2.
- Option D (10): would break the 1–9 consecutive fill of a 3×3 matrix.

Final Answer: Missing number = 9 $\Rightarrow$ **C**

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



Q40.

Solution

Concept — Figure matrix: count increases left-to-right; shape stays constant per row.

Step 1 — Identify the column pattern (count increases):

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

Step 2 — Identify the row pattern (shape is constant per row):

- Row 1: dots (•). Row 2: squares (□). Row 3: stars (★).

Step 3 — Missing cell (Row 3, Column 3): Shape = star, count = 3 $\Rightarrow$ ★★★.

Why other options are wrong:

- Option B (••): wrong shape (dots belong to Row 1) and wrong count.
- Option C (□□□): wrong shape (squares belong to Row 2).
- Option D (★★): correct shape but wrong count (should be 3, not 2).

Final Answer: ★★★ $\Rightarrow$ A

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



Answer Key

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

