

MAH B.P.Ed CET — Sample Paper

Mental Ability | Paper 9 of 10

Total Questions	15
Maximum Marks	15
Duration	18 Minutes
Marking Scheme	+1 for correct answer; No negative marking
Mode	Online CBT
Question Type	Single-correct MCQ (4 options each)

Each question has four options (A)–(D). Select the single most appropriate answer.

Instructions

1. This paper contains **15 Multiple Choice Questions (MCQs)**.
2. Each correct answer carries **+1 mark**. There is **no negative marking** for wrong answers.
3. Each question has **four** options – (A), (B), (C), (D). Select the **single best** answer.
4. Total time allotted is **18 minutes**.
5. Do not spend too much time on any single question; move on and return if time permits.
6. The detailed answer key and solutions are provided after the question paper.
7. Questions on Series, Analogy, Coding, Classification, Syllogism, Blood Relations, Direction and Figure Matrix are covered in this paper.

Section — Mental Ability (Q1 to Q15)

Q1. What is the next term in the following number series?

2, 6, 12, 20, 30, _____

- (A) 36
- (B) 42
- (C) 40
- (D) 44

Q2. What is the next term in the following letter series?

Z, X, V, T, R, _____

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

Q3. What is the next term in the following series?

1, 8, 27, 64, 125, _____

- (A) 216
- (B) 196
- (C) 225
- (D) 343

Q4. Choose the word that best completes the analogy below.

Doctor : Hospital :: Judge : _____

- (A) Police
- (B) Crime
- (C) Law
- (D) Court

Q5. Choose the number that best completes the analogy below.

7 : 49 :: 11 : _____

- (A) 110
- (B) 121
- (C) 132
- (D) 143



Q6. In a certain code language, **BOOK** is written as **DQQM** (each letter is shifted forward by 2 positions in the alphabet). Using the same rule, how is **FISH** coded in that language?

(A) GKUI

(B) HJUU

(C) HKUJ

(D) HLUJ

Q7. If **CAT = 24** using the code in which each letter is replaced by its position in the alphabet (A=1, B=2, ..., Z=26) and the code value is the *sum* of those position numbers, what is the code for **DOG**?

(A) 26

(B) 24

(C) 28

(D) 30

Q8. Four terms are given below. Three of them belong to a common category. Find the **odd one out**.

Rose Lotus Tulip Mango

(A) Rose

(B) Lotus

(C) Tulip

(D) Mango

Q9. Four numbers are given below. Three share a common mathematical property. Find the **odd one out**.

11 13 15 17

(A) 11

(B) 15



(C) 13

(D) 17

Q10. Directions (Q10–Q11): In each of the following questions, two statements are given followed by two conclusions numbered I and II. Assume the given statements to be true even if they seem to differ from commonly known facts, and decide which of the given conclusions logically follows from the statements.

Statements:

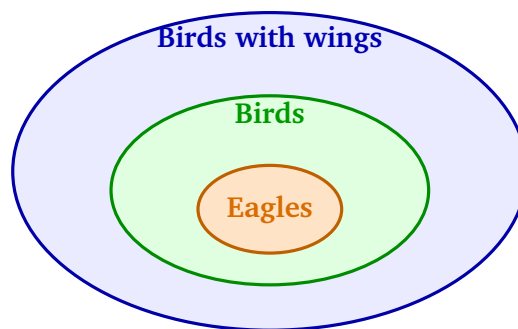
(i) All birds have wings.

(ii) All eagles are birds.

Conclusions:

I. All eagles have wings.

II. All birds are eagles.



(A) Only Conclusion I follows

(B) Only Conclusion II follows

(C) Both Conclusions I and II follow

(D) Neither Conclusion I nor II follows

Q11. (Refer to directions given in Q10)

Statements:



- (i) All roses are flowers.
- (ii) All flowers are beautiful.

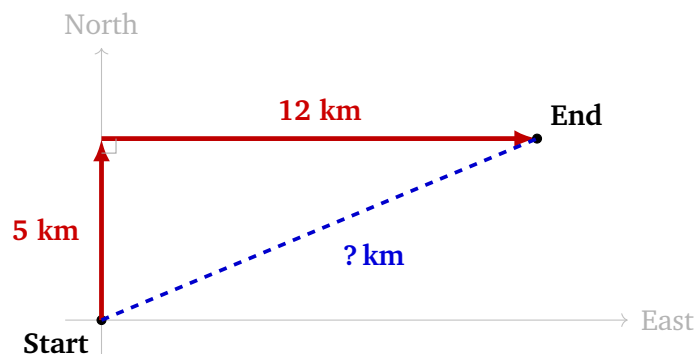
Conclusions:

- I. All roses are beautiful.
 - II. Some beautiful things are roses.
- (A) Only I
- (B) Only II
- (C) Both
- (D) Neither

Q12. A is B's mother's brother's son. What is A's relation to B?

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

Q13. Priya starts from a point and walks **5 km towards North**. She then turns to her right and walks **12 km towards East**. What is the **straight-line distance** from her starting point to her current position?



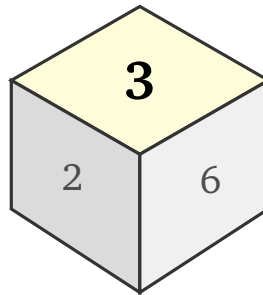
- (A) 11 km
- (B) 13 km



(C) 15 km

(D) 17 km

- Q14.** On a **standard die**, the numbers on *opposite faces always sum to 7*. If the **top face** of a standard die shows **3**, what number appears on the **bottom face**?



Top face shows 3 $\Rightarrow$ Bottom face = ?

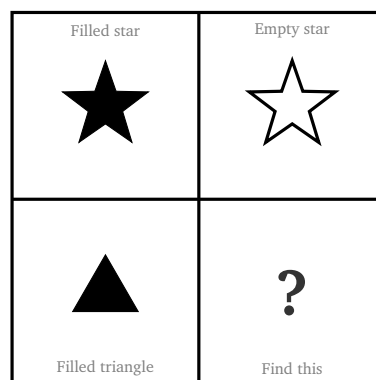
(A) 4

(B) 3

(C) 2

(D) 5

- Q15.** Study the 2×2 figure matrix given below. Identify the pattern and select the figure that should replace the question mark (?) in the bottom-right cell.



(A) ▲ (Filled triangle)



- (B) ★ (Filled star)
- (C) △ (Empty triangle)
- (D) ☆ (Empty star)



Detailed Solutions — Mental Ability

Q1.

Solution

Series: 2, 6, 12, 20, 30, _____

Each term follows the pattern $n \times (n + 1)$:

$$1 \times 2 = 2, \quad 2 \times 3 = 6, \quad 3 \times 4 = 12, \quad 4 \times 5 = 20, \quad 5 \times 6 = 30, \quad 6 \times 7 = 42.$$

Equivalently, the differences between consecutive terms are 4, 6, 8, 10, ... (increasing by 2 each time), so the next difference is 12 and $30 + 12 = 42$.

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

Q2.

Solution

Series: Z, X, V, T, R, _____

Convert letters to their alphabetical positions and find the differences:

Letter	Z	X	V	T	R	?
Position	26	24	22	20	18	
Gap		-2	-2	-2	-2	-2

Each term decreases by 2 positions (every alternate letter going backwards). The next position is $18 - 2 = 16$. The 16th letter of the alphabet is P.

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

Q3.

Solution

Series: 1, 8, 27, 64, 125, _____

Each term is a **perfect cube** of consecutive natural numbers:

$$1^3 = 1, \quad 2^3 = 8, \quad 3^3 = 27, \quad 4^3 = 64, \quad 5^3 = 125, \quad 6^3 = 216.$$



The next term is 216.

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

Q4.

Solution

The analogy is based on the **professional workplace** (where a professional performs their duties):

Doctor $\xrightarrow{\text{works at}}$ Hospital

Judge $\xrightarrow{\text{works at}}$ Court

A doctor practises medicine at a *hospital*; a judge presides over cases at a *court*. Police, Crime, and Law do not represent the workplace of a judge.

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

Q5.

Solution

The relationship is **number : its square** ($x : x^2$):

$$7 : 49 = 7 : 7^2 \implies 11 : 11^2 = 11 : 121.$$

Verify: $11^2 = 121$. ✓

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

Q6.

Solution

Rule: Each letter is shifted **forward by 2 positions** in the alphabet.

Verification with BOOK:



Plain letter	B	O	O	K
Position	2	15	15	11
Position + 2	4	17	17	13
Coded letter	D	Q	Q	M

$\Rightarrow$ BOOK $\rightarrow$ DQQM ✓

Applying to FISH:

Plain letter	F	I	S	H
Position	6	9	19	8
Position + 2	8	11	21	10
Coded letter	H	K	U	J

FISH is coded as HKUJ.

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

Q7.

Solution

Rule: Code value = sum of alphabetical position values of all letters (A=1, B=2, ..., Z=26).

Verification with CAT:

$$C(3) + A(1) + T(20) = 3 + 1 + 20 = 24 \checkmark$$

For DOG:

$$D(4) + O(15) + G(7) = 4 + 15 + 7 = 26.$$

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



Q8.

Solution

- **Rose** – a *flower* (the bloom of a flowering plant).
- **Lotus** – a *flower* (aquatic flowering plant).
- **Tulip** – a *flower* (spring-blooming flowering plant).
- **Mango** – a *fruit* (the edible produce of the mango tree, not a flower).

Rose, Lotus, and Tulip all belong to the category of **flowers**; Mango belongs to the category of **fruits**. Therefore, the odd one out is Mango.

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

Q9.

Solution

Check each number for the property of being a **prime number** (divisible only by 1 and itself):

- 11 – prime (no divisors other than 1 and 11). ✓
- 13 – prime (no divisors other than 1 and 13). ✓
- $15 = 3 \times 5$ – **composite** (has factors 1, 3, 5, 15). ✗
- 17 – prime (no divisors other than 1 and 17). ✓

11, 13, and 17 are all prime numbers; 15 is *not* a prime number. Therefore, the odd one out is 15.

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

Q10.

Solution

Given statements (assumed true):

- All birds have wings. $\Rightarrow \text{Birds} \subset \text{Things-with-wings}$.
- All eagles are birds. $\Rightarrow \text{Eagles} \subset \text{Birds}$.



By transitivity (as shown in the nested Venn diagram):

$$\text{Eagles} \subset \text{Birds} \subset \text{Things-with-wings}.$$

Conclusion I: “All eagles have wings.” – TRUE.

Since $\text{Eagles} \subset \text{Birds}$ and $\text{Birds} \subset \text{Things-with-wings}$, by transitivity $\text{Eagles} \subset \text{Things-with-wings}$, i.e., all eagles have wings. This is a valid deductive inference.

Conclusion II: “All birds are eagles.” – FALSE.

Statement (ii) says “All eagles are birds” but does not say “All birds are eagles”. There may be many birds (e.g., sparrows, pigeons) that are not eagles. Concluding the converse is an illicit conversion and is logically invalid.

∴ Only Conclusion I follows.

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

Q11.

Solution

Given statements (assumed true):

- (i) All roses are flowers. $\Rightarrow \text{Roses} \subset \text{Flowers}$.
- (ii) All flowers are beautiful. $\Rightarrow \text{Flowers} \subset \text{Beautiful things}$.

By transitivity:

$$\text{Roses} \subset \text{Flowers} \subset \text{Beautiful things}.$$

Conclusion I: “All roses are beautiful.” – TRUE.

Since $\text{Roses} \subset \text{Flowers}$ and $\text{Flowers} \subset \text{Beautiful things}$, all roses are beautiful.

Conclusion II: “Some beautiful things are roses.” – TRUE.

Since roses are a non-empty subset of beautiful things, there exist beautiful things that are roses (namely, every rose). This is a valid particular affirmative inference derived from the universal conclusion I.

∴ Both Conclusions I and II follow.

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



Q12.

Solution

Breaking down the relation step by step:

B's mother's brother = B's **Maternal Uncle**
Maternal Uncle's son = B's **Cousin**

Since A is B's mother's brother's son, A is B's **Cousin** (maternal cousin).

Note: Brother would apply only if A were B's own parent's son. Uncle applies only one generation up. Nephew would require B to be of the older generation relative to A.

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

Q13.

Solution

Priya's path forms a **right triangle**:

- Vertical leg (North) = 5 km
- Horizontal leg (East) = 12 km
- The right angle is at the turning point (North-East corner)

By the **Pythagorean theorem**, the straight-line distance d from Start to End is:

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

Tip: (5, 12, 13) is a classic Pythagorean triple – memorising it saves computation time.

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



Q14.

Solution

On a **standard die**, opposite faces always sum to 7:

$$1 \leftrightarrow 6, \quad 2 \leftrightarrow 5, \quad 3 \leftrightarrow 4.$$

If the **top face** shows 3, then:

$$\text{Bottom face} = 7 - 3 = 4.$$

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

Q15.

Solution

Pattern: In each row, the *filled* version of a shape transforms into the *empty* (outline) version of the **same** shape.

Top row	Filled star (★) → Empty star (outline ☆)
Bottom row	Filled triangle (▲) → ?

Applying the same pattern: Filled triangle → **Empty triangle** (△).

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



Answer Key — Mental Ability Sample Paper 9

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15 Questions | +1 per correct answer | No negative marking

Q.No.	Answer	Q.No.	Answer	Q.No.	Answer	Q.No.	Answer	Q.No.	Answer
1	B	2	C	3	A	4	D	5	B
6	C	7	A	8	D	9	B	10	A
11	C	12	D	13	B	14	A	15	C

Option	Count
(A)	4
(B)	4
(C)	4
(D)	3
Total	15

Click on any answer letter in the table above to jump to the detailed solution.

*For the question, click the **QN** label in the Solutions section.*

