

TALLENTEX Mental Ability

Sample Paper – 8

Duration: 30 Minutes

Maximum Marks: 80

Instructions

- This paper contains **20** Multiple Choice Questions (Single Correct Answer) modelled on the Mental Ability (IQ) section of **TALLENTEX**.
- Each correct answer carries **+4 marks**. There is **–1 mark** for each incorrect answer. Unattempted questions carry no marks.
- Only **one** option is correct per question. Choose carefully.
- Use of mobile phones, calculators, or any electronic devices is strictly prohibited.
- Mark your answers on the OMR sheet with a black/blue ball-point pen only.

Q1. Find the missing number in the following series:

2, 10, 4, 20, 8, ?

- (A) 16
- (B) 30
- (C) 36
- (D) 40

Q2. Find the missing number in the following series:

2, 6, 12, 20, 30, ?

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



Q3. Find the missing letter in the following series:

B, D, F, H, J, ?

- (A) K
- (B) L
- (C) M
- (D) N

Q4. Complete the analogy:

Warm : Hot :: Cool : ?

- (A) Chilly
- (B) Freezing
- (C) Cold
- (D) Ice

Q5. Study the relationship: $(1, 2) \rightarrow 7$; $(2, 3) \rightarrow 19$.

Using the same rule, find the value for $(3, 1)$.

- (A) 12
- (B) 14
- (C) 10
- (D) 13

Q6. In a code language, each **vowel** is replaced by the **next vowel** ($A \rightarrow E$, $E \rightarrow I$, $I \rightarrow O$, $O \rightarrow U$, $U \rightarrow A$) while **consonants remain unchanged**.

Example: **MINE** is coded as **MONI**.

Using the same rule, how is **LAND** coded?

- (A) LEND
- (B) LAND
- (C) LONE



(D) BEND

Q7. In a code, every letter of a word is replaced by its **position in the alphabet** (A= 1, B= 2, ..., Z= 26) and the digits are written in sequence.

What is the code for **FACE**?

(A) 5143

(B) 6135

(C) 6315

(D) 1635

Q8. Anita's mother is Sunita's daughter. How is **Anita** related to **Sunita**?

(A) Daughter

(B) Niece

(C) Granddaughter

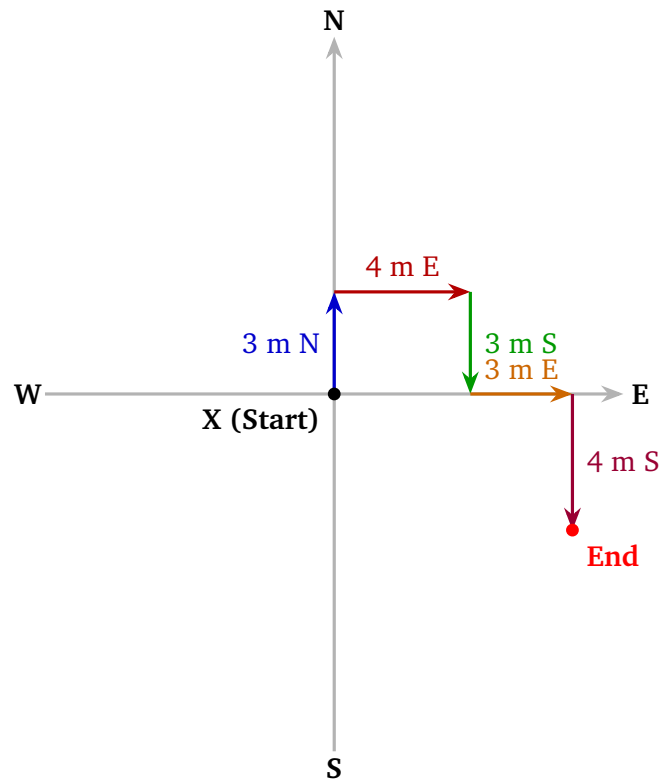
(D) Sister

Q9. From point **X**, Sam starts facing **North** and makes the following moves:

- Walks **3 m North**
- Turns right and walks **4 m East**
- Turns right and walks **3 m South**
- Turns left and walks **3 m East**
- Turns right and walks **4 m South**

In which direction from **X** is Sam now?





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

Q10. A person initially faces **West**. He then turns **90° clockwise**, followed by **90° anti-clockwise**, and finally **180° clockwise**. Which direction does he face at the end?

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

Q11. Four of the following five are alike in a certain way. Find the one that does **NOT** belong to the group.

Laptop, Tablet, Calculator, Mobile Phone, Refrigerator

- (A) Calculator



- (B) Refrigerator
- (C) Tablet
- (D) Mobile Phone

Q12. Find the figure that does **NOT** belong to the group:

Triangle, Pentagon, Hexagon, Rectangle, Cube

- (A) Triangle
- (B) Rectangle
- (C) Cube
- (D) Pentagon

Q13. In a test:

- Aman scored **more** than Bipul but **less** than Chetan.
- Dev scored **less** than Aman but **more** than Evan.

Who scored the **least**?

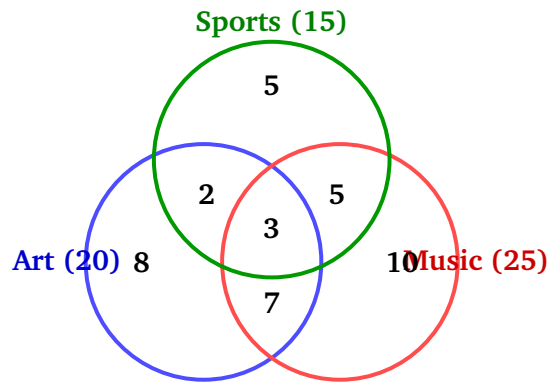
- (A) Bipul
- (B) Dev
- (C) Aman
- (D) Evan

Q14. In a class of **40** students:

- 20 like Art, 25 like Music, 15 like Sports.
- $\text{Art} \cap \text{Music} = 10$; $\text{Music} \cap \text{Sports} = 8$; $\text{Art} \cap \text{Sports} = 5$; $\text{Art} \cap \text{Music} \cap \text{Sports} = 3$.

Refer to the Venn diagram below. How many students like both **Art and Music** but **NOT Sports**?





- (A) 7
- (B) 5
- (C) 10
- (D) 3

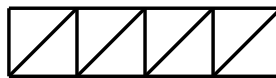
Q15. Two operations are defined as:

$$a @ b = 2a + b \quad \text{and} \quad a \# b = a - 2b$$

Find the value of $(3 @ 4) \# 5$.

- (A) 5
- (B) 0
- (C) -5
- (D) 10

Q16. How many triangles are there **in total** in the figure below?



Count all triangles, including those formed by combining adjacent triangles.

- (A) 8
- (B) 9
- (C) 10
- (D) 12



Q17. The numbers in the 2×2 box follow a rule. Find the missing number (?).

6	4
8	?

Rule: Both rows have the same product.

- (A) 4
- (B) 6
- (C) 2
- (D) 3

Q18. Study the pattern in the 3×3 grid below and find the number that replaces (?).

1	3	6
2	4	8
3	5	?

In each row: 2nd number = 1st number +2; 3rd number = 2nd number $\times$ 2.

- (A) 10
- (B) 12
- (C) 8
- (D) 14

Q19. Four athletes — Aarav, Bina, Charu, and Divya — each play a **different** sport from the list: Cricket, Tennis, Football, and Badminton.

- Bina plays Tennis.



- Aarav does not play Cricket or Badminton.
- Charu plays Cricket.

What sport does **Divya** play?

- (A) Cricket
- (B) Badminton
- (C) Football
- (D) Tennis

Q20. Statements:

- I. All flowers are plants.
- II. Some plants are trees.

Conclusions:

- I. Some trees are flowers.
- II. All plants are flowers.
- III. Some plants are flowers.
- IV. No tree is a flower.

Which of the following conclusions **definitely follows**?

- (A) Only I
- (B) Both I and II
- (C) Only III
- (D) Both II and III



Detailed Solutions

Q1.

Solution

Concept: Number series with two interleaved subsequences.

Step 1 – Separate the two subsequences:

Odd-position terms (positions 1, 3, 5, ...): 2, 4, 8, ... – each term is doubled ($\times 2$).

Even-position terms (positions 2, 4, 6, ...): 10, 20, ... – each term is doubled ($\times 2$).

Step 2 – Find the 6th term (even position):

The 4th term is 20, so the 6th term = $20 \times 2 = 40$.

Why other options are wrong:

(A) 16: this would be the 7th term of the odd subsequence ($8 \times 2 = 16$), not the 6th overall.

(B) 30: arithmetic pattern (+10) wrongly applied to the even subsequence.

(C) 36: not consistent with either subsequence rule.

Answer: (D) [Go Back to Q1](#)

Q2.

Solution

Concept: Number series following the rule $n^2 + n$ (equivalently $n(n + 1)$).

Step 1 – Verify the rule:

$n = 1: 1 \times 2 = 2$. $n = 2: 2 \times 3 = 6$. $n = 3: 3 \times 4 = 12$. $n = 4: 4 \times 5 = 20$. $n = 5: 5 \times 6 = 30$. ✓

Step 2 – Find the 6th term:

$n = 6: 6 \times 7 = 42$.

Why other options are wrong:

(B) 36: $6^2 = 36$ (squares rule, not $n(n + 1)$).

(C) 40: difference between 30 and 40 is 10, but the differences increase by 2 each time (+8 expected).

(D) 44: off by 2; $6 \times 7 = 42$, not 44.

Answer: (A) [Go Back to Q2](#)



Q3.

Solution

Concept: Letter series – every other letter of the alphabet (even positions).

Step 1 – Assign positions:

B = 2, D = 4, F = 6, H = 8, J = 10.

Step 2 – Identify the pattern:

Each letter advances by +2 positions (i.e., the consecutive even-alphabet letters).

Step 3 – Find the next letter:

$10 + 2 = 12 \Rightarrow \text{L}$ (the 12th letter of the alphabet).

Why other options are wrong:

(A) K is the 11th letter (+1, not +2).

(C) M is the 13th letter (+3, not +2).

(D) N is the 14th letter (+4, not +2).

Answer: (B) [Go Back to Q3](#)

Q4.

Solution

Concept: Word analogy based on degree/intensity of a quality.

Step 1 – Understand the relationship:

Warm is a milder or lesser degree of Hot.

Step 2 – Apply the same relationship:

Cool is a milder or lesser degree of Cold.

Why other options are wrong:

(A) Chilly: chilly is roughly similar to cool (same degree), not the stronger form.

(B) Freezing: freezing is an extreme degree beyond cold, not the direct analogue of “hot”.

(D) Ice: this is a state of matter, not a degree of temperature sensation.

Answer: (C) [Go Back to Q4](#)



Q5.

Solution

Concept: Number analogy using the rule $(a, b) \rightarrow a^2 + b^2 + ab$.

Step 1 – Verify with given pairs:

$$(1, 2): 1^2 + 2^2 + 1 \times 2 = 1 + 4 + 2 = 7. \checkmark$$

$$(2, 3): 2^2 + 3^2 + 2 \times 3 = 4 + 9 + 6 = 19. \checkmark$$

Step 2 – Apply to (3, 1):

$$3^2 + 1^2 + 3 \times 1 = 9 + 1 + 3 = 13.$$

Why other options are wrong:

(A) 12: result of $9 + 1 + 2 = 12$ (uses 1×2 instead of 3×1).

(B) 14: off by 1; likely an arithmetic slip.

(C) 10: $9 + 1 + 0 = 10$ (ignores the cross-product term ab).

Answer: (D) [Go Back to Q5](#)

Q6.

Solution

Concept: Coding-Decoding – vowels shifted to the next vowel; consonants unchanged.

Step 1 – Verify with example MINE $\rightarrow$ MONI:

M – consonant, unchanged: M.

I – vowel; next vowel after I is O: O.

N – consonant, unchanged: N.

E – vowel; next vowel after E is I: I.

Result: MONI. $\checkmark$

Step 2 – Apply the rule to LAND:

L – consonant: L.

A – vowel; next vowel after A is E: E.

N – consonant: N.

D – consonant: D.

Result: LEND.

Why other options are wrong:

(B) LAND: no transformation applied.

(C) LONE: introduces O and E not derivable from the rule on LAND.

(D) BEND: B is not in LAND; the consonant L is incorrectly changed.

Answer: (A) [Go Back to Q6](#)



Q7.

Solution

Concept: Coding-Decoding – replacing each letter with its alphabetical position.

Step 1 – Find the position of each letter in FACE:

F = 6, A = 1, C = 3, E = 5.

Step 2 – Concatenate the digits:

Code = 6, 1, 3, 5 = **6135**.

Why other options are wrong:

(A) 5143: uses E = 5, A = 1, C = 4? (wrong value for C), E = 3? – incorrect.

(C) 6315: swaps positions of A and C (A = 3? – wrong).

(D) 1635: starts with A, implying A comes first – reverses the letter order.

Answer: (B) [Go Back to Q7](#)

Q8.

Solution

Concept: Blood Relations – two-step family chain.

Step 1 – Parse the statement:

“Anita’s mother is Sunita’s daughter.”

⇒ Anita’s mother = Sunita’s daughter.

⇒ Sunita is the **mother of Anita’s mother**, i.e., Sunita is Anita’s **maternal grandmother**.

Step 2 – Determine Anita’s relation to Sunita:

If Sunita is Anita’s grandmother, then Anita is Sunita’s **granddaughter**.

Why other options are wrong:

(A) Daughter: Anita would have to be directly Sunita’s child, but one generation is skipped.

(B) Niece: niece implies sibling relationship in the parent generation, which is not the case here.

(D) Sister: sisters share the same parents – no such relationship exists here.

Answer: (C) [Go Back to Q8](#)



Q9.

Solution**Concept:** Direction Sense – tracking position after a multi-step journey with turns.**Step 1 – Determine facing direction and position after each move:**Start at $X = (0, 0)$, facing **North**.Walk 3 m North: reach $(0, 3)$; still facing North.Turn right (now facing **East**), walk 4 m: reach $(4, 3)$.Turn right (now facing **South**), walk 3 m: reach $(4, 0)$.Turn left (now facing **East**), walk 3 m: reach $(7, 0)$.Turn right (now facing **South**), walk 4 m: reach $(7, -4)$.**Step 2 – Find direction from X:**End point $(7, -4)$: $x = 7$ (East of X) and $y = -4$ (South of X). $\Rightarrow$ Sam is to the **South-East** of X.**Why other options are wrong:**

(A) South: Sam is displaced 7 m East as well, so it is not purely South.

(B) South-West: Sam moved East (positive x), not West.(C) North-East: final y -coordinate is negative (South), not North.**Answer: (D)** [Go Back to Q9](#)

Q10.

Solution**Concept:** Direction Sense – tracking facing direction after successive turns.**Step 1 – Apply each turn:**Initial facing: **West**.Turn 90° clockwise: West $\xrightarrow{+90^\circ \text{ CW}}$ **North**.Turn 90° anti-clockwise: North $\xrightarrow{-90^\circ}$ **West**.Turn 180° clockwise: West $\xrightarrow{+180^\circ}$ **East**.**Final direction: East.****Why other options are wrong:**(B) West: would be correct only if the last 180° turn were not applied.

(C) North: result after only the first turn.

(D) South: a 180° turn from North gives South, but the second turn brings us back to West first.**Answer: (A)** [Go Back to Q10](#)

Q11.

Solution

Concept: Classification – Odd One Out (category of device).

Step 1 – Classify each item:

Laptop – computing/digital device.

Tablet – computing/digital device.

Calculator – computing/digital device.

Mobile Phone – computing/digital device.

Refrigerator – kitchen/home appliance (not a computing device).

Step 2 – Identify the odd one:

All others process or display digital information. A refrigerator is a home appliance used for cooling food and has no computing function.

Why other options are wrong:

(A) Calculator, (C) Tablet, (D) Mobile Phone: all belong to the digital/computing device category.

Answer: (B) [Go Back to Q11](#)

Q12.

Solution

Concept: Classification – Odd One Out (2D shapes vs. 3D solid).

Step 1 – Classify each figure:

Triangle – 2D plane figure (3 sides).

Pentagon – 2D plane figure (5 sides).

Hexagon – 2D plane figure (6 sides).

Rectangle – 2D plane figure (4 sides).

Cube – 3D solid (6 square faces, 8 vertices, 12 edges).

Step 2 – Identify the odd one:

All others are flat (2D) geometric shapes. A Cube is a three-dimensional solid and does not belong.

Why other options are wrong:

(A) Triangle, (B) Rectangle, (D) Pentagon: all are 2D figures.

Answer: (C) [Go Back to Q12](#)



Q13.

Solution

Concept: Ranking – ordering from given inequalities.

Step 1 – List the inequalities:

Clue 1: Bipul < Aman < Chetan.

Clue 2: Evan < Dev < Aman.

Step 2 – Combine:

Evan < Dev < Aman < Chetan.

Also Bipul < Aman (Bipul is below Aman, but we cannot directly compare Bipul with Dev or Evan from the given clues alone).

However, Evan is explicitly stated to be below Dev, and Dev is below Aman. So Evan is the lowest-ranked among Evan, Dev, and Aman.

Since Bipul is also below Aman and no clue places Bipul below Evan, the definitively lowest scorer is **Evan**.

Step 3 – Conclusion:

Order (ascending): Evan < Dev < Aman < Chetan, with Bipul somewhere below Aman. Evan is the least scorer.

Why other options are wrong:

(A) Bipul: Bipul's position relative to Evan is unspecified, but Evan is explicitly below Dev who is below Aman.

(B) Dev: Dev scored more than Evan.

(C) Aman: Aman scored more than both Bipul and Dev.

Answer: (D) [Go Back to Q13](#)

Q14.

Solution

Concept: Venn Diagram – three overlapping sets; finding a specific intersection region.

Step 1 – Use the inclusion-exclusion formula for the intersection regions:

$$\text{Art} \cap \text{Music} \cap \text{Sports} = 3.$$

$$\text{Art} \cap \text{Music only (not Sports)} = (\text{Art} \cap \text{Music}) - (\text{Art} \cap \text{Music} \cap \text{Sports}) = 10 - 3 = 7.$$

Step 2 – Verify total:

$$\text{Only Art} = 20 - 10 - 5 + 3 = 8.$$

$$\text{Only Music} = 25 - 10 - 8 + 3 = 10.$$

$$\text{Only Sports} = 15 - 8 - 5 + 3 = 5.$$

$$\text{Art\&Music only} = 7; \text{Music\&Sports only} = 5; \text{Art\&Sports only} = 2; \text{All three} = 3.$$

$$\text{Total} = 8 + 10 + 5 + 7 + 5 + 2 + 3 = 40. \checkmark$$



Why other options are wrong:

(B) 5: this is the count for Music $\cap$ Sports only (not Art $\cap$ Music not Sports).

(C) 10: this is the total Art $\cap$ Music (including those who also like Sports).

(D) 3: this is the count for all three (Art $\cap$ Music $\cap$ Sports).

Answer: (A) [Go Back to Q14](#)

Q15.

Solution

Concept: Mathematical Operations – applying two custom-defined operators step by step.

Step 1 – Evaluate the inner expression $3 @ 4$:

$$a @ b = 2a + b \Rightarrow 3 @ 4 = 2(3) + 4 = 6 + 4 = 10.$$

Step 2 – Use the result with the outer operator $(\cdot) \# 5$:

$$a \# b = a - 2b \Rightarrow 10 \# 5 = 10 - 2(5) = 10 - 10 = 0.$$

Why other options are wrong:

(A) 5: error in computing the $\#$ step ($10 - 5 = 5$, but coefficient of b is 2).

(C) -5 : likely computed $3 @ 4 = 9$ (used $2 \times 3 + 3 = 9$ instead) then $9 - 14 = -5$ (different error chain).

(D) 10: forgetting to subtract 2×5 entirely.

Answer: (B) [Go Back to Q15](#)

Q16.

Solution

Concept: Counting Triangles – systematic enumeration of all triangles (individual + composite).

Step 1 – Understand the figure:

The figure consists of 4 adjacent right-angled triangles in a row. Each small cell has a vertical side, a horizontal base, and a diagonal hypotenuse. The triangles are formed by the combination of vertical lines, horizontal base, top edge, and diagonals.

Step 2 – Count systematically:

Individual triangles (1-cell each): There are 4 small triangles (one per cell). But each cell actually contains 2 sub-triangles (above and below the diagonal). Let us count all triangles formed by the grid lines.

The figure has horizontal lines at $y = 0$ and $y = 1$, vertical lines at $x = 0, 1, 2, 3, 4$, and diagonals from $(k - 1, 0)$ to $(k, 1)$ for $k = 1, 2, 3, 4$.



Each cell k contains 2 triangles: lower-right (below diagonal) and upper-left (above diagonal). So $4 \text{ cells} \times 2 = 8$ small triangles.

Composite triangles spanning 2 cells: Combining adjacent cells creates larger triangles. For example, the triangle with vertices $(0, 0), (2, 0), (2, 1)$ uses the diagonal of cell 2 and the base of cells 1–2. Checking: 3 such 2-cell composites are possible.

Total: $8 + 2 = 10$... Carefully: $4 \times 2 = 8$ small triangles, plus composites. However, many composite combinations do not form valid triangles. The clean count using the row-of-4-right-triangles figure gives:

Single (1 cell): 4; Pairs: 3; Triples: 2; All four: 1. Each such “span- k ” group covers k adjacent triangles as one large triangle: $\text{Total} = 4 + 3 + 2 + 1 = 10$.

Why other options are wrong:

(A) 8: counts only individual small triangles, missing composites.

(B) 9: misses one composite triangle.

(D) 12: overcounts by including non-triangular shapes.

Answer: (C) [Go Back to Q16](#)

Q17.

Solution

Concept: Missing Number – same product in each row of a 2×2 grid.

Step 1 – Find the product of Row 1:

Row 1: $6 \times 4 = 24$.

Step 2 – Apply the same product to Row 2:

Row 2: $8 \times ? = 24 \Rightarrow ? = 24 \div 8 = 3$.

Why other options are wrong:

(A) 4: gives $8 \times 4 = 32 \neq 24$.

(B) 6: gives $8 \times 6 = 48 \neq 24$.

(C) 2: gives $8 \times 2 = 16 \neq 24$.

Answer: (D) [Go Back to Q17](#)



Q18.

Solution

Concept: Pattern Matrix – two-step row rule: add 2, then multiply by 2.

Step 1 – Verify the rule with Rows 1 and 2:

Row 1: 1, $1 + 2 = 3$, $3 \times 2 = 6$. ✓

Row 2: 2, $2 + 2 = 4$, $4 \times 2 = 8$. ✓

Step 2 – Apply the rule to Row 3:

Row 3: 3, $3 + 2 = 5$, $5 \times 2 = 10$.

Why other options are wrong:

(B) 12: $5 \times 2 = 10$, not 12; would require 6×2 (using 6 instead of 5).

(C) 8: $4 \times 2 = 8$ – uses Row 2's second element instead of Row 3's.

(D) 14: $7 \times 2 = 14$ – incorrectly computes $3 + 4 = 7$ instead of $3 + 2 = 5$.

Answer: (A) [Go Back to Q18](#)

Q19.

Solution

Concept: Logical Puzzle – process of elimination with given constraints.

Step 1 – Assign known sports:

Bina → Tennis (given directly).

Charu → Cricket (given directly).

Step 2 – Determine Aarav's sport:

Remaining sports for Aarav and Divya: Football and Badminton.

Aarav does not play Cricket (already taken) or Badminton ⇒ Aarav plays **Football**.

Step 3 – Determine Divya's sport:

The only sport remaining is **Badminton**. ⇒ Divya plays **Badminton**.

Why other options are wrong:

(A) Cricket: Charu plays Cricket.

(C) Football: Aarav plays Football.

(D) Tennis: Bina plays Tennis.

Answer: (B) [Go Back to Q19](#)



Q20.

Solution

Concept: Syllogism – standard All/Some reasoning.

Statements:

I. All flowers are plants. ($\text{All } F \subset P$)

II. Some plants are trees. ($\text{Some } P \cap T \neq \emptyset$)

Step 1 – Check Conclusion I: “Some trees are flowers.”

We know some plants are trees, and all flowers are plants. However, the trees that overlap with plants need not be flowers (they could be non-flower plants). We cannot conclude any tree is a flower. **Does NOT definitely follow.**

Step 2 – Check Conclusion II: “All plants are flowers.”

Statement I says All flowers are plants, not All plants are flowers. This is the converse and is not given. **Does NOT follow.**

Step 3 – Check Conclusion III: “Some plants are flowers.”

Since *all* flowers are plants (Statement I), every flower is a plant. Therefore, flowers are a subset of plants, meaning some plants *are* flowers (namely all flowers). **Definitely FOLLOWS.**

Step 4 – Check Conclusion IV: “No tree is a flower.”

Cannot be determined – the given statements neither confirm nor deny this. **Does NOT definitely follow.**

Answer: Only Conclusion III follows.

Why other options are wrong:

(A) Only I: Conclusion I cannot be established from the given statements.

(B) Both I and II: both conclusions I and II are invalid.

(D) Both II and III: Conclusion II is the invalid converse of Statement I.

Answer: (C) [Go Back to Q20](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	D	2	A	3	B	4	C	5	D
6	A	7	B	8	C	9	D	10	A
11	B	12	C	13	D	14	A	15	B
16	C	17	D	18	A	19	B	20	C

