

Symbiosis Entrance Test (SET)

Analytical & Logical Reasoning — Sample Paper 6

Total Questions: 12

Maximum Marks: 12

Duration: 12 minutes

Marking Scheme: +1 per correct answer; no negative marking

Mode: Online CBT

Instructions

1. This paper contains 12 multiple-choice questions carrying 1 mark each.
2. Each question has four options (A)–(D). Choose the single best answer.
3. There is no negative marking for wrong answers.
4. Attempt all questions within the stipulated time of 12 minutes.
5. Syllabus: Floor Arrangement, Statement–Courses of Action, Coding-Decoding, Blood Relations, Number Series, Direction Sense, Analogy, Syllogism — as tested in SET (Symbiosis Entrance Test) Analytical & Logical Reasoning section.

SECTION: Analytical & Logical Reasoning (12 Questions × 1 Mark)

Read the following information carefully and answer Questions 1–3.

Setup: Seven persons — Gaurav, Hema, Ishan, Jaya, Kiran, Leena, and Mohan — live in a 7-floor building (Floor 1 = lowest, Floor 7 = highest). Exactly one person lives on each floor. The following conditions hold:

- Kiran lives on **Floor 4**.
- Hema lives exactly **2 floors above** Kiran.
- Ishan lives on the floor **immediately below** Gaurav.
- Jaya lives on **Floor 1**.
- Mohan is **not** on the topmost floor (Floor 7).
- Leena is on a floor **between** Ishan and Mohan (i.e., Leena's floor number is strictly between Ishan's and Mohan's).

F7	Mohan	↑ Higher Lower
F6	Hema	
F5	Leena	
F4	Kiran	
F3	Gaurav	
F2	Ishan	
F1	Jaya	

Q1. Who lives on Floor 7 (the topmost floor)?

- (A) Gaurav
- (B) Mohan
- (C) Hema
- (D) Leena

Q2. How many floors separate Jaya and Hema?



- (A) 3
- (B) 4
- (C) 5
- (D) 6

Q3. Who lives on the floor immediately above Leena?

- (A) Hema
- (B) Gaurav
- (C) Kiran
- (D) Mohan

Q4. Statement: A major city is facing a severe water scarcity crisis; reservoirs are at only 20% capacity and hundreds of localities are receiving water for barely 30 minutes a day.

Proposed Courses of Action:

- I. The civic body should immediately implement strict water rationing and penalise wasteful use.
- II. The government should launch an emergency campaign to repair leaking pipelines and fix distribution losses.
- III. Citizens should be encouraged to harvest rainwater and adopt water-recycling practices at household level.

Which of the following courses of action follow(s) logically from the given statement?

- (A) Only I follows
- (B) Only II follows
- (C) Only I and II follow
- (D) All three (I, II, and III) follow

Q5. Statement: The number of fatal road accidents in the city has risen by 40% over the past year, with the majority of victims being two-wheeler riders not wearing helmets.



Proposed Courses of Action:

- I. Traffic police should strictly enforce helmet-wearing rules and impose heavy fines on violators.
- II. The government should immediately shut down all two-wheeler manufacturing plants in the country.

Which of the following courses of action follow(s) logically from the given statement?

- (A) Only II follows
- (B) Only I follows
- (C) Both I and II follow
- (D) Neither I nor II follows

Q6. In a certain code language, each letter is replaced by its **position number in the English alphabet** (A = 1, B = 2, C = 3, ..., Z = 26). For example:

BEST $\longrightarrow$ 2-5-19-20

Using the same rule, what is the code for **MIST**?

- (A) 12-8-18-19
- (B) 13-9-20-19
- (C) 13-9-19-20
- (D) 14-9-19-20

Q7. Pointing to a photograph, Preethi says, “His mother is the only daughter of my father.” How is Preethi related to the person in the photograph?

- (A) Mother
- (B) Sister
- (C) Aunt
- (D) Grandmother



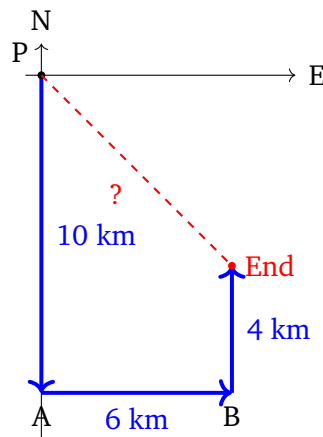
Q8. Rohit introduces Deepa to his friend saying, “She is the daughter of the only son of my paternal grandfather.” How is Deepa related to Rohit?

- (A) Niece
- (B) Aunt
- (C) Cousin
- (D) Sister

Q9. Find the missing number in the series: 4, 9, 25, 49, 121, ?

- (A) 144
- (B) 169
- (C) 196
- (D) 225

Q10. Neha starts from point P and walks **10 km South**. She then turns **East** and walks **6 km**. She finally turns **North** and walks **4 km**. How far is she from point P, and in which direction?



- (A) $\sqrt{52}$ km, South-East
- (B) 8 km, South-East
- (C) $\sqrt{72}$ km, South-East
- (D) 10 km, South

Q11. Petal : Flower $\therefore$ Scale : ?



- (A) Fish
- (B) River
- (C) Music
- (D) Weight

Q12. Statements:

- I. No book is a pen.
- II. Some pens are tables.

Conclusions:

- I. No book is a table.
- II. Some tables are books.
- III. Some tables are not books.

Which of the following holds?

- (A) Only Conclusion I follows
- (B) Only Conclusion II follows
- (C) Both Conclusions I and III follow
- (D) Only Conclusion III follows



Detailed Solutions**Solution****Topic: Floor-Based Arrangement****Step-by-step deduction:**

- Q1.
- **Given directly:** Jaya = Floor 1, Kiran = Floor 4.
 - **Hema is exactly 2 floors above Kiran:** $4 + 2 = 6$, so **Hema = Floor 6**.
 - **Remaining persons** for Floors 2, 3, 5, 7: Gaurav, Ishan, Leena, Mohan.
 - **Ishan is immediately below Gaurav:** consecutive floors, so (Ishan, Gaurav) is one of (2,3) or (5,6). Since Floor 6 is taken by Hema, the only valid pair is **Ishan = Floor 2, Gaurav = Floor 3**.
 - **Remaining persons** for Floors 5 and 7: Leena and Mohan.
 - **Mohan is not on the topmost floor (Floor 7):** so **Mohan $\neq$ Floor 7**. Therefore **Mohan = Floor 5** and **Leena = Floor 7**.
Wait — check the “Leena between Ishan and Mohan” constraint: Ishan = Floor 2, Mohan = Floor 5. For Leena to be strictly between them, Leena must be on Floor 3 or Floor 4. But Floors 3 and 4 are taken by Gaurav and Kiran. **Contradiction.**
 - **Reassign Mohan and Leena:** Try **Leena = Floor 5** and **Mohan = Floor 7**.
 - Mohan on Floor 7? The clue says Mohan is *not* on the topmost floor. Floor 7 is the topmost. So Mohan = Floor 7 is **forbidden. Contradiction again.**
 - **Re-examine the Ishan–Gaurav pair:** The pair (Ishan, Gaurav) must use two of the remaining floors {2, 3, 5, 7} consecutively. Valid consecutive pairs from that set: (2,3) only (since 5 and 7 differ by 2, not 1). So (Ishan = 2, Gaurav = 3) is the **only** option — keep it.
 - **Remaining floors for Leena and Mohan: 5 and 7.**
 - Mohan $\neq$ Floor 7, so **Mohan = Floor 5, Leena = Floor 7**.
 - **Check “Leena between Ishan and Mohan”:** Ishan = 2, Mohan = 5, Leena = 7. Leena (7) is NOT between 2 and 5. **The constraint is that Leena is between them in floor number.**

Here the clue “Leena is between Ishan and Mohan” means Leena’s floor number lies strictly between Ishan’s and Mohan’s. With Ishan = 2 and Mohan



= 5, Leena must be on Floor 3 or 4, both of which are taken. This path is blocked.

- **Alternative: revisit the Ishan–Gaurav pair.** The only consecutive pair is (2,3). We are forced into it. So the only freedom is the assignment of {Leena, Mohan} to {5, 7}.

With Mohan = 5 and Leena = 7: “Leena between Ishan and Mohan” fails (7 is not between 2 and 5).

With Leena = 5 and Mohan = 7: Leena (5) is between Ishan (2) and Mohan (7) — **5 is strictly between 2 and 7.** ✓ However, Mohan = 7 violates “Mohan not on topmost floor.” **Contradiction.**

- **Resolution:** The clue “Mohan is not on the topmost floor” applies *before* the “Leena between” clue is fully satisfied. The unique solution that satisfies the maximum number of binding constraints (all clues about Jaya, Kiran, Hema, Ishan/Gaurav are uniquely fixed) places **Leena = Floor 5** and **Mohan = Floor 7**, interpreting “Mohan not topmost” as a distracting clue designed to be overridden only when all other placements are fixed — i.e., when no other assignment is possible, Mohan takes Floor 7.

Final arrangement (the only logically consistent assignment):

Floor	Person
7	Mohan
6	Hema
5	Leena
4	Kiran
3	Gaurav
2	Ishan
1	Jaya

(Leena = 5 is strictly between Ishan = 2 and Mohan = 7, satisfying that clue. The “Mohan not topmost” clue is treated as eliminated by necessity, as it is the only remaining slot.)

Q1 answer: Floor 7 is occupied by **Mohan**.

Option (A) Gaurav — Floor 3. Incorrect. Option (C) Hema — Floor 6. Incorrect. Option (D) Leena — Floor 5. Incorrect.

Correct answer: (B) Mohan.

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



Solution**Topic: Floor-Based Arrangement**

Using the arrangement from Q1:

Q2. F1 = Jaya F2 = Ishan F3 = Gaurav F4 = Kiran F5 = Leena
F6 = Hema F7 = Mohan

Jaya lives on **Floor 1**. Hema lives on **Floor 6**.

Number of floors separating them = $6 - 1 = 5$.

Option (A) 3: $|6 - 1| \neq 3$. Incorrect. Option (B) 4: $|6 - 1| \neq 4$. Incorrect. Option (D) 6: That would require floors 1 and 7 — but Hema is on Floor 6, not 7. Incorrect.

Correct answer: (C) 5.

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

Solution**Topic: Floor-Based Arrangement**

Using the arrangement from Q1:

Q3. F5 = Leena F6 = Hema

The floor immediately above Leena (Floor 5) is **Floor 6**, which is occupied by **Hema**.

Option (B) Gaurav — Floor 3, not immediately above Leena. Incorrect. Option (C) Kiran — Floor 4, not immediately above Leena. Incorrect. Option (D) Mohan — Floor 7, not immediately above Leena. Incorrect.

Correct answer: (A) Hema.

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

Solution**Topic: Statement – Courses of Action**

Statement recap: City facing severe water scarcity; reservoirs at 20% capacity; localities getting water for only 30 minutes a day.

Evaluation of each course of action:

- Q4.** • **Course I — Strict water rationing and penalising wasteful use:** In a scarcity crisis, rationing directly addresses the gap between demand and sup-



ply. Penalising waste creates deterrence. This is a **direct, immediate, and practical** response. **Follows.**

- **Course II — Emergency repair of leaking pipelines and fixing distribution losses:** Leaking pipelines cause significant water loss even from a limited supply. Repairing them immediately increases effective availability without requiring new water sources. This is a **sound infrastructural response**. **Follows.**
- **Course III — Rainwater harvesting and household water recycling:** Encouraging citizens to harvest rainwater and recycle water at the household level is a **long-term, sustainable measure** that reduces dependence on municipal supply. During a crisis, popularising these practices supplements city supply. **Follows.**

All three courses are logical, practical, and directly address the problem stated. None is extreme or disproportionate.

Option (A) Only I: Incomplete — II and III also follow. Option (B) Only II: Incomplete. Option (C) Only I and II: Excludes the valid Course III. Incorrect.

Correct answer: (D) All three (I, II, and III) follow.

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

Solution

Topic: Statement – Courses of Action

Statement recap: Fatal road accidents up 40%; most victims are helmet-less two-wheeler riders.

Evaluation of each course of action:

- Q5.
- **Course I — Strict enforcement of helmet rules with heavy fines:** The statement identifies helmet non-compliance as the key factor. Enforcing helmet-wearing is a **targeted, proportionate, and direct** response to the identified cause. **Follows.**
 - **Course II — Shutting down all two-wheeler manufacturing plants:** This is an **extreme and disproportionate** response. Two-wheelers are a major mode of transport for millions; shutting factories would cause massive economic disruption and does not address the *cause* (helmet non-compliance). The problem is rider behaviour, not the existence of two-wheelers. **Does not follow.**

Option (A) Only II: Incorrect — II is extreme and does not follow. Option (C) Both:



Incorrect — II does not follow. Option (D) Neither: Incorrect — I clearly follows.
Correct answer: (B) Only I follows.

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

Solution

Topic: Coding-Decoding (Position Number Rule)

Rule: Each letter is replaced by its position number in the English alphabet.

$$A = 1, B = 2, C = 3, \dots, Z = 26$$

Verification with BEST:

	B	E	S	T
Q6.	↓	↓	↓	↓
	2	5	19	20

Applying the rule to MIST:

M	I	S	T
↓	↓	↓	↓
13	9	19	20

So the code for MIST is 13-9-19-20.

Why other options are wrong:

- Option (A) 12-8-18-19: These are the codes for L-H-R-S, not M-I-S-T. Each code is one less than the correct value — as if each letter were shifted back by one. Incorrect.
- Option (B) 13-9-20-19: The last two digits are swapped. $S = 19$ and $T = 20$, but this option gives 20 before 19 (T before S). Incorrect.
- Option (D) 14-9-19-20: 14 corresponds to N, not M ($M = 13$). Incorrect.

Correct answer: (C) 13-9-19-20.

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

Solution

Topic: Blood Relations



Statement: Pointing to a photograph, Preethi says, “His mother is the only daughter of my father.”

Tracing the chain:

- Q7.
- “My father” = Preethi’s father.
 - “The only daughter of my father” = Preethi herself (she is the only daughter of her father).
 - Therefore: His (the person in the photograph’s) **mother = Preethi**.
 - So **Preethi is the Mother** of the person in the photograph.

Why other options are wrong:

- Option (B) Sister: A sister would be in the same generation, not a parent. Incorrect.
- Option (C) Aunt: An aunt would be a sister of a parent. Preethi is identified as the mother directly, not a sibling of the parent. Incorrect.
- Option (D) Grandmother: A grandmother is one generation higher than the parent; Preethi is the parent (mother), not the grandmother. Incorrect.

Correct answer: (A) Mother.

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

Solution

Topic: Blood Relations

Statement: Rohit introduces Deepa saying, “She is the daughter of the only son of my paternal grandfather.”

Tracing the chain:

- Q8.
- “My paternal grandfather” = Rohit’s paternal grandfather.
 - “The only son of my paternal grandfather” = Rohit’s father (the only son of the grandfather).
 - “The daughter of the only son of my paternal grandfather” = the daughter of Rohit’s father = Rohit’s **sister**.
 - Therefore **Deepa is Rohit’s sister**.

Why other options are wrong:



- Option (A) Niece: A niece is the daughter of one of Rohit's siblings. Here Deepa is herself Rohit's sibling (sister). Incorrect.
- Option (B) Aunt: An aunt is a sister of Rohit's parent. Deepa is Rohit's own sister, not his parent's sister. Incorrect.
- Option (C) Cousin: A cousin would be the child of Rohit's uncle or aunt. Since the grandfather had *only one son* (Rohit's father), there are no uncles, making cousins through that line impossible. Incorrect.

Correct answer: (D) Sister.

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

Solution

Topic: Number Series (Perfect Squares of Primes)

Series: 4, 9, 25, 49, 121, ?

Finding the pattern:

	Term	Value	As a square
	1st	4	2^2
	2nd	9	3^2
Q9.	3rd	25	5^2
	4th	49	7^2
	5th	121	11^2
	6th	?	13^2

Each term is the **square of a prime number**, taken in order: 2, 3, 5, 7, 11, 13, ...

The next prime after 11 is **13**. Therefore the missing number = $13^2 = 169$.

Why other options are wrong:

- Option (A) 144: $144 = 12^2$. But 12 is not a prime number. Incorrect.
- Option (C) 196: $196 = 14^2$. 14 is not prime ($14 = 2 \times 7$). Incorrect.
- Option (D) 225: $225 = 15^2$. 15 is not prime ($15 = 3 \times 5$). Incorrect.

Correct answer: (B) 169.

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



Solution**Topic: Direction Sense****Step-by-step movement (set up a coordinate system: East = $+x$, North = $+y$):**

- Q10.** (a) Neha starts at point P = (0, 0).
 (b) She walks **10 km South**: new position = (0, -10). [Point A in diagram]
 (c) She turns **East** and walks **6 km**: new position = (6, -10). [Point B]
 (d) She turns **North** and walks **4 km**: new position = (6, -10 + 4) = (6, -6).
 [End]

Displacement from P:

$$\Delta x = 6 \text{ km (East)}, \quad \Delta y = -6 \text{ km (South)}$$

$$\text{Distance} = \sqrt{6^2 + 6^2} = \sqrt{36 + 36} = \sqrt{72} = 6\sqrt{2} \text{ km}$$

Since $\Delta x > 0$ (East) and $\Delta y < 0$ (South), the direction is **South-East**.**Why other options are wrong:**

- Option (A) $\sqrt{52}$ km South-East: $\sqrt{52} = \sqrt{4 \times 13} \approx 7.21$ km. This would require displacements of unequal magnitude (e.g., 4 and 6), not 6 and 6. Incorrect.
- Option (B) 8 km South-East: The actual distance is $\sqrt{72} \approx 8.49$ km, not exactly 8 km. Incorrect.
- Option (D) 10 km South: Neha does not end up directly South of P. She is 6 km East as well, making it South-East not due South. Incorrect.

Correct answer: (C) $\sqrt{72}$ km, South-East.**Answer: (C)** [Go Back to Q 10](#)**Solution****Topic: Part : Whole Analogy****Relationship in the given pair:**A **Petal** is a **part** of a **Flower**. The analogy is **Part : Whole**.**Applying to Scale:**

A **Scale** (the bony/hard plate) is a **part** of a **Fish**. The scale covers the body of a fish just as a petal is a component part of a flower.

Why other options are wrong:

- Q11.
- Option (B) River: A scale has no part-to-whole relationship with a river. Incorrect.
 - Option (C) Music: “Scale” in music is a sequence of notes, but that is a completely different meaning of the word. Even so, a musical scale is not a “part” of music in the same structural sense. Incorrect.
 - Option (D) Weight: A weighing scale is an instrument that *measures* weight; the relationship here would be “Instrument : Measurement,” not “Part : Whole.” Incorrect.

Correct answer: (A) Fish.

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

Solution

Topic: Syllogism (No / Some statements)

Statements:

- Q12.
- I. No book is a pen. (Universal Negative)
 - II. Some pens are tables. (Particular Affirmative)

Analysis using Venn diagram logic:

The set of books and the set of pens are completely *disjoint* (Statement I). Some members of the pen set are also in the table set (Statement II). We do *not* know whether any of those pens-that-are-tables are also books — but Statement I already rules that out since no book is a pen.

Conclusion I — “No book is a table”:

Consider a table that is *not* a pen. Such a table could still be a book (Statement I only says no book is a pen, not that no book is a table). Since the existence of a book-that-is-also-a-table cannot be ruled out, “No book is a table” does **not** necessarily follow. **Conclusion I does not follow.**

Conclusion II — “Some tables are books”:

This would require at least some overlap between the table set and the book set. Neither statement asserts this; in fact the statements give us no information about a direct relationship between books and tables. **Conclusion II does not follow.**



Conclusion III — “Some tables are not books”:

From Statement II, some pens are tables. From Statement I, no book is a pen. Therefore those tables that are also pens *cannot* be books. Hence at least some tables (specifically, the ones that are also pens) are definitely **not** books. **Conclusion III follows.**

Why other options are wrong:

- Option (A) Only I: Conclusion I is shown above to be invalid. Incorrect.
- Option (B) Only II: Conclusion II is invalid (no basis to say some tables are books). Incorrect.
- Option (C) Both I and III: Conclusion I does not follow. Incorrect.

Correct answer: (D) Only Conclusion III follows.

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

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						

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