

PACE-IIT & MEDICAL

ACE of PACE APTITUDE-CUM-SCHOLARSHIP TEST

Grade X

DATE: 09th AUG 2026

DURATION: 60 Min.

TOTAL QUES.: 20

MAX. MARKS: 100

What is this Test?

The ACE of PACE Aptitude-cum-Scholarship Test evaluates your aptitude, logical reasoning, analytical thinking and problem-solving skills to assess your potential for competitive examinations like IIT-JEE and NEET.

What Do You Gain?

- Performance Assessment
- Merit-based Scholarship Opportunity
- Understand your readiness for JEE/NEET
- Opportunity to Qualify for the Accelerated Platinum Batch

Examination Pattern

Phase	Que.	Marks
Phase I – Aptitude	8	28
Phase II – Quantitative Analysis	8	40
Phase III – Challenge Round	4	32
Total	20	100

General Instructions

- Read all questions carefully.
- Fill the OMR sheet correctly.
- No electronic devices are permitted.
- Follow the invigilator's instructions

Result Declaration:

12th Aug 2026

Scholarship Validity:

30th Aug 2026

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Let's get started

(Only One Option is Correct for All Questions)

Phase 1- Aptitude

1. **The Traveler's Dilemma** (3 marks)
 Mohan needs to travel from the village of Oakhaven to the mountain town of Silverfalls. He can take 2 direct mountain passes straight to Silverfalls. Alternatively, he can travel through the trade hub of Riverdale – taking any of 4 forest roads from Oakhaven to Riverdale, followed by any of 5 river routes from Riverdale to Silverfalls. In how many different ways can Mohan make his journey?
 (A) 22 (B) 20 (C) 15 (D) 11
2. **The Three-Hand Coincidence** (3 marks)
 Between high noon and midnight's chiming edge, three hands sweep smoothly around the dial. Excluding the twelve o'clock thresholds, how often do hour, minute, and second fall upon the exact same mark?
 (A) 0 (B) 1 (C) 2 (D) 3
3. **The Lighthouse Vault** (3 marks)
 Detective Jay stood inside the dimly lit control room of the abandoned coastal lighthouse. In front of him sat a heavy iron vault with a four-letter digital keypad. Above the display, a dusty leather notebook lay open to a handwritten note left behind by the lighthouse keeper: 'To reveal the secret inside, you must decipher the pattern. If RANK is coded as NXLJ, what code will unlock PACE?'
 (A) TXEF (B) TXFL (C) LXAD (D) LXSP
4. **The Secret Side of the Die** (3 marks)
 Rahul placed a mystery cube on his desk, observing a 3 on top, a 1 facing front, and a 5 on the right side. Without tilting it, he gave the cube a turn until the front showed a 2 and the right side revealed a 6. If he turns the cube over to inspect the side directly opposite 5, which digit will he find hiding there?
 (A) 3 (B) 4 (C) 5 (D) 6
5. **The Great Track Chase** (4 marks)
 X and Y line up for a 4 km endurance run around a 400 m circular track. At the starter signal, both spring forward together in the same direction. X maintains a swift, steady pace while Y runs at a calm rhythm, keeping their speeds at a constant ratio of 5: 3. As X powers around the loop, how many times will he lap Y before crossing the finish line (excluding the start)?
 (A) 2 (B) 3 (C) 4 (D) 5
6. **The Scenic Commute** (4 marks)
 Shreya left her house for work at the bank, taking a winding morning commute. She drove 10 km south, turned left and drove 20 km, and then turned left again to drive 40 km. She then made a right turn and drove 5 km, followed by a final right turn for 20 km until she reached the bank parking lot. As a bird flies, what is the shortest distance between her house and her bank?
 (A) $4\sqrt{29}$ (B) $4\sqrt{41}$ (C) $5\sqrt{29}$ (D) $5\sqrt{41}$

7. **The Round Table Musical Chairs** (4 marks)
 Eight chairs numbered 1 through 8 are arranged in a circle in a clockwise direction around a table. Four friends – Ananya, Bhavya, Chetan, and Diya – are sitting on four of these chairs, leaving four chairs vacant. Initial Seating Clues:
- Ananya is sitting on Chair 1.
 - Bhavya is sitting on Chair 5 (directly opposite Ananya).
 - Diya is sitting adjacent to Bhavya, but not on Chair 6.
 - Chetan is sitting on a chair such that both chairs adjacent to him are vacant, and the chair directly opposite him is also vacant.
- Movement Rules:
 Turn 1: Ananya moves clockwise to occupy the very first vacant chair in that direction.
 Turn 2: Chetan moves counterclockwise to occupy the very first vacant chair in that direction.
 After Turn 2, which two friends are sitting next to each other (in adjacent chairs)?
- (A) Bhavya and Chetan (B) Ananya and Diya
 (C) Diya and Bhavya (D) Both (A) and (C)
8. **The Deep Space Harmonic** (4 marks)
 Far out in the solar system, three solitary deep-space probes—Astra, Beacon, and Chronos—pulse telemetry signals back to Earth on fixed intervals:
- Astra broadcasts every 12 hours.
 - Beacon broadcasts every 18 hours.
 - Chronos broadcasts every 30 hours.
- On Tuesday at 6:00 AM, a rare cosmic harmony occurs: all three radio pulses hit Earth’s deep-space receivers at the exact same instant. Mission Control logs the triple sync and asks: When will all three probes ping Earth together again?
- (A) Next Wednesday at 6:00 PM (B) Next Tuesday at 6:00 PM
 (C) Next Wednesday at 6:00 AM (D) Next Tuesday at 6:00 AM

Phase 2 – Quantitative Analysis

9. **The 30-Second Classroom Mystery** (5 marks)
 Aarav walked up to his teacher’s desk, beaming. “Mr. Sharma, I just proved that $2 = 3$!”. He wrote on the board:
- | | |
|---|------------|
| $-6 = -6$ | - Step (1) |
| $4 - 10 = 9 - 15$ | - Step (2) |
| $4 - 10 + \frac{25}{4} = 9 - 15 + \frac{25}{4}$ | - Step (3) |
| $\left(2 - \frac{5}{2}\right)^2 = \left(3 - \frac{5}{2}\right)^2$ | - Step (4) |
| $2 - \frac{5}{2} = 3 - \frac{5}{2}$ | - Step (5) |
| $2 = 3$ | - Step (6) |
- Mr. Sharma chuckled. “Nice try, Aarav. Grab the eraser.”
 This is a fallacy, now find which step contains the error?
- (A) Step 2 (B) Step 3 (C) Step 4 (D) Step 5

10. **Diagonal to Frame** (5 marks)
 An architect is reviewing the blueprints for a sleek, custom rectangular storage container designed for a modern warehouse. According to the design specs: The main interior body diagonal (from a bottom corner to the opposite top corner) measures exactly D meters and the total outer surface area of the container is S square meters. Before sending the specs to the steel fabrication team, the site supervisor asks: "How many total meters of metal edging strip will we need to frame all 12 edges of this container?"
 (A) $2\sqrt{D^2 - S}$ (B) $4\sqrt{D^2 - S}$ (C) $2\sqrt{D^2 + S}$ (D) $4\sqrt{D^2 + S}$
11. **Connecting Two Junctions** (5 marks)
 In a bustling model adventure park, two toy trains run along curved parabolic tracks laid out on a coordinate grid:
 • The Red Line follows a steep, curving valley given by ' $y = 2x^2 - 4x + 3$ '.
 • The Blue Line glides along a wider arch given by ' $y = x^2 - 3x + 9$ '.
 The two tracks cross each other at two junction points: Junction A and Junction B.
 What is the minimum length of wire required to connect two junctions?
 (A) $5\sqrt{5}$ (B) $6\sqrt{5}$ (C) $5\sqrt{6}$ (D) $6\sqrt{6}$
12. **The Wizard's Spell** (5 marks)
 An alchemist casts a spell to triple a 2-digit pouch of gold coins (PQ), transforming it into a grand total of RQQ coins. Each letter (P, Q, R) represents a unique single-digit number, and R cannot be zero.
 Uncover the values of P, Q, and R, then solve $(P + R) \div Q$ to know the alchemist's spell.
 (A) 1 (B) 2 (C) 3 (D) 4
13. **The Eight Watchtowers** (5 marks)
 Deep in the heart of an ancient realm stood a perfectly circular, enchanted lake. Spaced evenly around its shoreline were eight majestic watchtowers.
 Legend spoke of a hidden magic: whenever a rope was stretched directly across the lake center-connecting two opposite towers to form a diameter line and then tying it to any third tower on the shore, the ropes formed a perfect right-angled triangular territory!
 The royal cartographer was tasked with mapping out every possible right-angled territory that could be formed this way using the watchtowers.
 Can you figure out how many unique right-angled triangles the cartographer will draw?
 (A) 6 (B) 12 (C) 18 (D) 24
14. **The Gold Coin Quest** (5 marks)
 Three adventurer friends – Pranav (p), Qamar (q), and Rakul (r) – return from an expedition with chests full of gold coins.
 First Sharing: Generous Pranav decides to share 60% of his coins with Qamar. Upon receiving them, Qamar's stash increases to 140% of what he originally had.
 Second Sharing: Pranav then gives 30% of his original coins to Rakul. With this boost, Rakul's stash grows to 180% of what she originally started with.
 If all three friends started with a positive number of gold coins, how do their original coin counts compare? Who had the most, and who had the least?
 (A) $q > p > r$ (B) $p > q > r$
 (C) $r > p > q$ (D) $q > r > p$

15. **The Consecutive Siblings** (5 marks)
 Once upon a time, in the mathematical realm of Arithmos, three sibling integers always walked strictly side-by-side, standing next to each other on the number line.
 One day, a mysterious sphinx guarded the city gate and posed a riddle to passing travelers: "Search far and wide through the infinite universe of numbers. Find every group of three consecutive integer siblings whose total sum when added together is exactly equal to their product when multiplied together."
 If you were a traveler trying to enter the city, how many such magic trios would you be able to find?
 (A) Only one trio (B) Only two trios
 (C) Only three trios (D) No such trio exists
16. **The Realm of Unity** (5 marks)
 In the enchanted Kingdom of Unity, there exists a mysterious entity known as Omega (ω). Ancient legends reveal two sacred laws governing its power:
 1) The Law of Trine: When Omega's energy multiplies three times upon itself (ω^3), it always returns to perfect unity ($\omega^3 = 1$).
 2) The Law of Balance: When the Realm's core unit (1), Omega (ω), and its shadow (ω^2) stand together, their forces completely nullify each other ($1 + \omega + \omega^2 = 0$).
 "To earn your entry into the kingdom, you must solve the riddle of the ancient stone:
 Calculate the exact value of $\left(\omega^2 + \frac{1}{\omega^2}\right)^2$ to unlock the gate."
 (A) 3 (B) 2 (C) 1 (D) 0

Phase 3 – Challenging Round

17. **The Riddle of the Shrinking Magic Crystal** (8 marks)
 Deep inside the Enchanted Forest, a mysterious wizard leaves a glowing crystal at the base of the Great Oak. At the start of the journey ($n = 1$), the crystal shines with a power level of 2. Every time a traveler takes a step forward ($n \rightarrow n + 1$), the crystal's power transforms according to an ancient rule:

$$x_{n+1} = \frac{x_n}{1 + x_n}$$
 If a hero walks 100 steps into the forest, what will be the exact power level of the crystal (x_{100})?
 (A) $\frac{2}{201}$ (B) $\frac{2}{199}$ (C) $\frac{3}{201}$ (D) $\frac{3}{199}$
18. **The Canterbury Puzzles** (8 marks)
 "Inside a rectangular room, measuring 30 feet in length and 12 feet in width and height, a spider is at a point on the middle of one of the end walls, 1 foot from the ceiling, and a fly is on the opposite wall, 1 foot from the floor in the center. What is the shortest distance that the spider must crawl in order to reach the fly, which remains stationary? Of course, the spider never drops or uses its web, but crawls fairly."
 (A) 40 (B) 38 (C) 42 (D) 34

19. **The Great Morning Lineup** (8 marks)
- On a freezing morning outside The Daily Grind, a single-file queue forms.
- Zaheer stands near the front. The number of people ahead of him is equal to one-third the number of people standing behind Yuvraj.
 - Yuvraj stands further back. The number of people between Zaheer and Yuvraj is equal to the number of people behind Ashish.
 - Ashish is near the end of the line. The number of people ahead of Ashish is three times the number of people between Yuvraj and Ashish.
 - There are 3 people between Yuvraj and Ashish, and Zaheer is strictly ahead of Yuvraj.
 - Before the doors open, a group of latecomers equal in size to the number of people between Zaheer and Ashish joins the line, while 2 people at the very back leave in frustration.
- What is the final number of people standing in the queue?
- (A) 12 (B) 16 (C) 20 (D) 24
20. **The Spy in the Mint** (8 marks)
- A royal treasurer hands you nine identical gold coins, warning that a spy swapped one for a counterfeit. Eight weigh the same, but the fake is either slightly lighter or heavier – you don't know which. Armed only with a traditional two-pan balance scale, what is the minimum number of weighings needed to guarantee you catch the fake coin and reveal whether it is heavier or lighter?
- (A) 1 (B) 2 (C) 3 (D) 4