Mathematics

Practice Test Paper 10

(Chapter 1: Real Numbers)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A: 5 × 1 = 5 marks; Section B: 4 × 2 = 8 marks; Section C: 3 × 3 = 9 marks; Section D: 1 × 3 = 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Use prime factorisation where required. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

1. For distinct primes p and q, the LCM of p^2q^3 and p^3q^2 is:

(A) pq (B) p^2q^2

(C) p^3q^3 (D) p^5q^5

2. The least three-digit number divisible by 15, 20 and 25 is:

(A) 100 (B) 150

(C) 200 (D) 300

3. The sum $(4 + \sqrt{3}) + (4 - \sqrt{3})$ equals:

(A) 8

(B) $2\sqrt{3}$

(C) $8 + 2\sqrt{3}$

(D) 5

4. If a prime p divides n^2, where n is an integer, then p must divide:

(A) $n + 1$ (B) n

(C) $n - 1$ (D) every integer

5. Which of the following is irrational?

(A) $\sqrt{\frac{4}{9}}$ (B) $\sqrt{\frac{9}{16}}$

(C) $\sqrt{\frac{2}{9}}$ (D) $\sqrt{\frac{25}{36}}$

SECTION B

(4 questions × 2 marks = 8 marks)

6. Using prime factorisation, find the HCF and LCM of 336 and 54. Verify that their product equals the product of the two integers.

7. Given that $\sqrt{2}$ is irrational, prove that $\frac{5}{3+\sqrt{2}}$ is irrational.

8. Prove that $3^n + 3^{n+1}$ is composite for every natural number $n \geq 1$.

9. A student claims that every integer divisible by both 9 and 15 must be divisible by 135. Disprove the claim with a counterexample, and explain the role of the LCM.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Simplify $\sqrt{\frac{1}{2}} + \sqrt{8}$ and prove that it is irrational, given that $\sqrt{2}$ is irrational.

11. Find the least positive integer k such that 84k is divisible by 198. Separately, find the least positive integer m such that 198m is divisible by 84.

12. Let x be an irrational number whose square is rational. Prove that its cube is irrational, and give one example.

SECTION D

(Application Based Question - 3 marks)

13. Three runners start together from the starting point of a circular track at 8:00 a.m. They complete one lap in 10, 15 and 18 minutes respectively, and maintain these lap times.

(i) At what time will all three next be together at the starting point?

(ii) At what time will the 10-minute and 15-minute runners next be together at the starting point?

(iii) How many laps does the fastest runner complete by the next starting-point meeting of all three?