Mathematics

Practice Test Paper 2

(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. The largest prime factor of 3825 is:

(A) 5 (B) 13

(C) 17 (D) 19

2. If p and q are distinct prime numbers, their LCM is:

(A) 1 (B) $p + q$

(C) $p - q$ (D) pq

3. Which of the following is rational?

(A) $\sqrt{2} + \sqrt{3}$

(B) $\frac{\sqrt{18}}{\sqrt{2}}$

(C) $3\sqrt{5}$

(D) $1 + \sqrt{2}$

4. If $a = 2^3 \times 3^2 \times 5$ and $b = 2^2 \times 3^3 \times 7$, their HCF is:

(A) 12 (B) 36

(C) 108 (D) 180

5. The difference between a rational number and an irrational number is always:

(A) rational

(B) an integer

(C) irrational

(D) zero

SECTION B

(4 questions × 2 marks = 8 marks)

6. Using prime factorisation, find the HCF and LCM of 140 and 156.

7. Given that $\sqrt{2}$ is irrational, prove that $5 - 2\sqrt{2}$ is irrational.

8. Show, without multiplying out the entire expression, that $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ is composite.

9. A student says that two positive integers can have HCF 8 and LCM 60. Is the statement possible? Justify your answer.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Prove that $\sqrt{3}$ is irrational.

11. The HCF of two positive integers is 26 and their LCM is 390. Find all possible unordered pairs of the integers.

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

Also find $(3 + 2\sqrt{5})(3 - 2\sqrt{5})$.

SECTION D

(Application Based Question - 3 marks)

13. Three traffic lights change every 48, 72 and 108 seconds. They change together at 9:00 a.m.

(i) Find the interval, in seconds, between successive simultaneous changes.

(ii) At what time will they next change together?

(iii) How many times does the 48-second light change after 9:00 a.m. up to and including that instant?