Mathematics

Practice Test Paper 7

(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. If $N = 2^3 \times 3^2$, the greatest power of 2 that divides N^2 is:

(A) 2^3 (B) 2^6

(C) 2^9 (D) 2^{12}

2. The LCM of the smallest two-digit natural number and the smallest composite number is:

(A) 10 (B) 14

(C) 20 (D) 40

3. Which of the following is a rational number?

(A) $\sqrt{20} - 2\sqrt{5}$ (B) $\sqrt{5} + 2$

(C) $\frac{1}{\sqrt{5}}$ (D) $\sqrt{45}$

4. If the HCF of positive integers a and b is a, which statement must hold?

(A) a is prime

(B) b is a multiple of a

(C) $a + b = 1$

(D) a and b are coprime

5. For distinct primes p and q, the HCF of p^2q and pq^2 is:

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

(C) pq (D) p^2q^2

SECTION B

(4 questions × 2 marks = 8 marks)

6. Two tankers contain 850 litres and 680 litres of water. Find the greatest capacity of a container that measures the water in either tanker exactly, with no water left over.

7. Given that $\sqrt{2}$ is irrational, prove that $6 + \sqrt{2}$ is irrational.

8. Let a and b be coprime positive integers. Find the HCF and LCM of a^2b and ab^2, giving a reason.

9. Find the HCF of 84 and 132, and show that it divides their difference. Explain why every common divisor of two integers divides their difference.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Given that $\sqrt{2}$ is irrational, prove that $\frac{\sqrt{2}+1}{\sqrt{2}-1}$ is irrational.

11. Find the greatest six-digit number exactly divisible by 28, 40 and 63.

12. Two positive integers have HCF 12, LCM 180 and sum 96. Find the integers.

SECTION D

(Application Based Question - 3 marks)

13. Pencils are sold in packs of 24 and crayons in packs of 32. A teacher buys the smallest equal number of pencils and crayons, using whole packs. A pencil pack costs ₹30 and a crayon pack costs ₹40.

(i) How many pencils and how many crayons does the teacher buy?

(ii) How many packs of each type are required?

(iii) Find the total cost.