

DELHI PUBLIC SCHOOL JAMMU

Session- 2024-25

FA-I

Sample Paper

Class-X

Time: 1 Hour

Subject-Mathematics

Max Marks: 25

General instruction:

- i. *This Question Paper has 5 Sections A, B, C, D, and E.*
- ii. *Section A has 4 Multiple Choice Questions (MCQs) carrying 1 mark each.*
- iii. *Section B has 2 Short Answer-I (SA-I) type questions carrying 2 marks each.*
- iv. *Section C has 3 Short Answer-II (SA-II) type questions carrying 3 marks each.*
- v. *Section D has 1 Long Answer (LA) type question carrying 5 marks.*
- vi. *Section E has 1 Case Based integrated units of assessment (3 marks) with sub-parts of the values of 2 and 1 marks each respectively.*
- vii. *All Questions are compulsory.*

SECTION A (MCQ)

1. If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$; x,y are prime numbers, then HCF (a, b) is (1)
(a) xy (b) xy^2 (c) x^3y^3 (d) x^2y^2
2. If the sum of LCM and HCF of two numbers is 1260 and and their LCM is 900 more than their HCF, then the product of two numbers is. (1)
(a) 203400 (b) 194400 (c) 198400 (d) 205400
3. If the product of the zeroes of the quadratic polynomial $3x^2 + 5k + k$ is $-2/3$, then the value of k is (1)
(a) -3 (b) -2 (c) 2 (d) 3
4. Zeroes of polynomial $x^2 - 15$ are (1)
(a) -15, 15 (b) $-\sqrt{15}, +\sqrt{15}$ (c) -5, 5 (d) $-\sqrt{5}, \sqrt{5}$

SECTION B

5. Prove that $\sqrt{2}$ is an irrational number. (2)

OR

Prove that $2 + \frac{3}{2}\sqrt{5}$ is an irrational number.

6. If α and β are the zeroes of quadratic Polynomial $5x^2+5x+1$ find the value of (2)
- (i) $\alpha^{-1} + \beta^{-1}$ (ii) $\alpha^3 + \beta^3$

SECTION C

7. Find by Prime Factorization, LCM of the numbers 18180 and 7575. Also, find the HCF of two numbers. (3)
8. If one zero of the polynomial $P(x) = 6x^2 + 37x - (k-2)$ is reciprocal of the other, then find the value of k

OR

Find the zeroes of the quadratic polynomial $4x^2 - 5 = 0$ and hence find the relation of the coefficients of zeroes (3)

9. A merchant has 240 L of one kind 120 L of another and 180 L of third kind of all. He wants to sell all by filling the three kinds. If oil in tins of equal capacity, what would be largest capacity of such tin (3)

SECTION D

10. Find the zeroes of $2s^2 - (1 + 2\sqrt{2})s + \sqrt{2}$ by factorization method and verify the relation between zeroes and the coefficients of the polynomial. (5)

OR

Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients:

(a) $f(x) = x^2 - 3x - 28$

(b) $f(x) = 2x^2 - x - 6$

SECTION E (Case Study)

(3)

10. To enhance the reading skills of grade X students, the school nominates you and two of your friends to set up a class library. There are two sections- section A and section B of grade X. There are 32 students in section A and 36 students in section B.



- (i) What is the minimum number of books you will acquire for the class library, so that they can be distributed equally among students of Section A or Section B? (1M)
- (ii) If p and q are positive integers such that $p = a$ and $q = b$, where a, b are prime numbers, then the LCM (p, q) is (2M)

Or

36 can be expressed as a product of its primes as