

**NOIDA PUBLIC SCHOOL
SAMPLE PAPER (2023-24)
SUBJECT- Mathematics
CLASS-X**

TIME: $1\frac{1}{2}$ HOURS

M.M.:40

GENERAL INSTRUCTIONS:

All questions are compulsory.

SECTION -A (1 Mark Each)

Choose the correct answers in Exercises from 1 to 3 (M.C.Q.)

- Q 1.** If two positive integers a and b are written as $a = x^3 y^2$ and $b = xy^3$; x, y are prime numbers, then HCF (a, b) is (A) xy (B) xy^2 (C) x^3y^3 (D) x^2y^2
- Q 2.** The largest number which divides 70 and 125, leaving remainders 5 and 8, respectively, is (A) 13 (B) 65 (C) 875 (D) 1750
- Q 3.** If the zeroes of the quadratic polynomial $x^2 + (a + 1)x + b$ are 2 and -3 , then (A) $a = -7, b = -1$ (B) $a = 5, b = -1$ (C) $a = 2, b = -6$ (D) $a = 0, b = -6$
- Q 4.** Form a quadratic polynomial, one of whose zeroes is $3 + \sqrt{2}$ and the sum of zeroes is 6.
- Q 5.** Find the HCF of 336 and 54 by the prime factorization method. Hence, find their LCM.
- Q 6.** Explain why $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers
- Q 7.** Given that $\text{HCF}(426, 576) = 6$, find $\text{LCM}(426, 576)$.
- Q 8.** Find the zeroes of the quadratic polynomial $x^2 + 7x + 12$, and verify the relationship between the zeroes and the coefficients.
- Q 9.** Solve $2x + 3y = 11$ and $2x - 4y = -24$ and hence find the value of 'm' for which $x = my + 3$
- Q 10.** Find the LCM of smallest prime number and composite number .

SECTION -B

(2 Marks Each)

- Q 10.** Find a quadratic polynomial, the sum and product of whose zeroes are 4 and 1, respectively. Also find its zeroes.
- Q 11.** Find k so that $x^2 + 2x + k$ is a factor of $2x^4 + x^3 - 14x^2 + 5x + 6$. Also find all the zeroes of the two polynomials.
- Q 12.** For which values of a and b does the following pair of linear equations have an infinite number of solutions? $2x - 3y = 7, (a + b)x + (a + b - 3)y = 4a + b$
- Q 13.** Reshma can row downstream 40 km in 4 hours, and upstream 12 km in 6 hours. Find her speed of rowing in still water and the speed of the current.

SECTION -C

(3 Marks Each)

- Q 15.** Divide $3x^2 - x^3 - 3x + 5$ by $x - 1 - x^2$ and verify the division algorithm
- Q 16.** Draw the graphs of the equations $x - y + 1 = 0$ and $3x - 2y = 12$. Determine the co-ordinates of the vertices of the triangle formed by these lines and the y axis.
- Q 17.** If one of the zeroes of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3 , then find the value of k .
- Q 14.** Prove that $\sqrt{3}$ is irrational

SECTION -D

(5 Marks Each)

- Q 18.** If a and b are the zeroes of polynomial $kx^2 + 4x + 4$. Find the value of k such that $(a + b)^2 - 2ab = 24$
- Q 19.** A boat goes 24 km upstream and 28 km downstream in 6 hours. In 6:30 hours, it can go 30 km upstream and 21 km down-stream. Determine the speed of the stream and that of the boat in still water