CLASS 10 MATH TEST PAPER 6

Class 10 - Mathematics

Time Allowed: 1 hour **Maximum Marks: 30**

Section A

1. If $a = 2^3 \times 3, b = 2 \times 3 \times 5, c = 3^n \times 5$ and LCM (a, b, c) $= 2^3 \times 3^2 \times 5$, then n = **[1]**

   a) 1 b) 4

   c) 3 d) 2

2. The LCM of smallest 2-digit number and smallest composite number is **[1]**

   a) 4 b) 20

   c) 40 d) 12

3. If α, β are the zeros of polynomial f(x) = x^2 − p (x + 1) − c, then (α + 1) (β + 1) = **[1]**

   a) 1 + c b) c

   c) c − 1 d) 1 − c

4. The zeroes of the polynomial x^2 - 3x - m (m + 3) are: **[1]**

   a) –m, –(m + 3) b) m, –(m + 3)

   c) –m, m + 3 d) m, m + 3

5. The pair of linear equations 2x = 5y + 6 and 15y = 6x - 18 represents two lines which are: **[1]**

   a) either intersecting or parallel b) intersecting

   c) parallel d) coincident

6. If the pair of equations 3x - y + 8 = 0 and 6x - ry + 16 = 0 represent coincident lines, then the value of **r** is: **[1]**

   a) $\frac{1}{2}$ b) $-\frac{1}{2}$

   c) 2 d) -2

7. If α and β are the roots of ax^2 + bx + c = 0, then the wrong statement is **[1]**

   a) $\alpha^2 + \beta^2 = \frac{b^2 - 2ac}{a^2}$ b) $\frac{1}{\alpha} + \frac{1}{\beta} = \frac{-b}{c}$

   c) $\alpha + \beta = \frac{b}{a}$ d) $\alpha\beta = \frac{c}{a}$

8. If the quadratic equation $9x^2$ + bx + $\frac{1}{4}$ = 0 has equal roots, then the value of b is: **[1]**

   a) 3 only b) 0

   c) -3 only d) $\pm$ 3

9. **Assertion (A):** P(x) = $4x^3$ - x^2 + $5x^4$ + 3x - 2 is a polynomial of degree 3. **[1]**

   Reason (R): The highest power of x in the polynomial P(x) is the degree of the polynomial.

   a) Both A and R are true and R is the correct explanation of A.

   b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

10. **Assertion (A):** System of equations x + py = 6 and 2x + 3y = 8 can never have infinite solutions for any real value of k. **[1]**

Reason (R): Condition of inconsistency for system of linear equation in two variables is $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Section B

11. Find the HCF and LCM of 90 and 144 by the method of prime factorization. **[2]**

12. Prove that $(5 - 3\sqrt{2})$ is an irrational number, given that $\sqrt{2}$ is irrational number. **[2]**

13. If α and β are the zeroes of the polynomial $4x^2 - 2x + (k - 4)$ and $\alpha = \frac{1}{\beta}$, find the value of k. **[2]**

14. Solve for x: $\frac{1}{x} - \frac{1}{x-2} = 3$; $x \neq 0, 2$ **[2]**

Section C

15. Find the zeroes of the quadratic polynomial $7y^2 - \frac{11}{3}y - \frac{2}{3}$ and verify the relationship between the zeroes and the coefficients. **[3]**

OR

Find the zeroes of the polynomial $v^2 + 4\sqrt{3}v - 15$ by factorisation method and verify the relationship between the zeroes and coefficient of the polynomials.

16. Determine graphically the coordinates of the vertices of the triangle, the equation of whose sides are y = x, 3y = x and x + y = 8. **[3]**

17. The numerator of a fraction is 3 less than its denominator. If 2 is added to both the numerator and the denominator, then the sum of the new fraction and original fraction is $\frac{29}{20}$. Find the original fraction. **[3]**

18. ABCD is a trapezium in which $AB \| DC$. P and Q are points on sides AD and BC such that $PQ \| AB$. If PD= 18, BQ = 35 and QC= 15, find AD. **[3]**

OR

In the figure, if $\triangle ABC \sim \triangle DEF$ and their sides are of lengths (in cm) as marked along them, then find the lengths of the sides of each triangle.