

DEPARTMENT OF SCHOOL EDUCATION – VILLUPURAM DISTRICT

ASSIGNMENT – December 2021

Xth STANDARD

MATHEMATICS (UNIT 3)

MARKS – 50

I. ANSWER THE FOLLOWING

6x2=12

1. Find the LCM of  $2x^2 - 5x - 3$ ,  $4x^2 - 36$
2. Reduce the following rational expression to its lowest form  $\frac{x^2 - 11x + 18}{x^2 - 4x + 4}$
3. Simplify  $\frac{5t^3}{4t-8} \times \frac{6t-12}{10t}$
4. Find the square root of  $\frac{144 a^8 b^{12} c^{16}}{81 f^{12} g^4 h^{14}}$
5. Frame the quadratic equation whose roots are 9 and 14
6. If the difference between a number and its reciprocal is  $\frac{24}{5}$ , find the number.

II. ANSWER THE FOLLOWING

6x5=30

7. Solve the following system of linear equations in three variables

$$3x - 2y + z = 2, \quad 2x + 3y - z = 5, \quad x + y + z = 6.$$

8. Simplify  $\frac{b^2 + 3b - 28}{b^2 + 4b + 4} \div \frac{b^2 - 49}{b^2 - 5b - 14}$

9. If  $A = \frac{x}{x+1}$ ,  $B = \frac{1}{x+1}$ , Prove that  $\frac{(A+B)^2 + (A-B)^2}{A \div B} = \frac{2(x^2+1)}{x(x+1)^2}$ .

10. Find the square root of  $121x^4 - 198x^3 - 183x^2 + 216x + 144$

11. A passenger train takes 1 hr more than an express train to travel a distance of 240 km from Chennai to Virudhachalam. The speed of passenger train is less than that of an express train by 20km per hour. Find the average speed of both the trains.

12. If  $\alpha, \beta$  are the roots of  $7x^2 + ax + 2 = 0$  and if  $\beta - \alpha = \frac{-13}{7}$ . Find the values of a.

III. ANSWER THE FOLLOWING

1x8=8

13. Draw the graph of  $y = 2x^2 - 3x - 5$  and hence use it to solve  $2x^2 - 4x - 6 = 0$