St. JOHN'S RESIDENTIAL PUBLIC SCHOOL

Sona Gopalpur, Sampatchak, Patna – Gaya Highway, Patna – 7

Pre – Mid Term Exam - I (2023 – 24)

Grade: X **Date : / 05/ 23**

Subject: MATHEMATICS **Max Marks: 25** **Duration: 1 hr.**

Name: _____ **Roll: _____**

SECTION – A (1 mark each)

1. If $a=2^2 \times 3^3 \times 5^4$ and $b=2^3 \times 3^2 \times 5$. HCF of a and b is
   a) 90 b) 180 c) 360 d) 540
2. The simplest form of $\frac{36}{144}$ is _____
3. $\sqrt{2}$ is a rational number or irrational number.
4. Which of these is co-primes?
   a) (14, 35) b) (18,25) c) (31, 93) d) (32, 62)
5. The system $kx - y = 2$ and $6x - 2y = 3$ has unique solution only. Then k= _____

SECTION – B (2 marks each)

6. The product of two numbers is 1600 and their HCF is 5. Find the LCM of the given numbers.
7. Show that system of equations $3x - 5y = 7$ and $6x - 10y = 3$ has no solution.
8. If $x - y = 2$ and $\frac{2}{x+y} = \frac{1}{5}$. Find x and y.

SECTION – C (3 marks each)

9. Find the value of k for which the system of equations $kx + 2y = 3$, $3x + 6y = 10$ has unique solution.
10. If $\sqrt{3}\tan\theta = 1$. Evaluate $\text{Cos}^2\theta - \text{Sin}^2\theta$

OR

Prove that $\frac{1-\sin 60°}{\cos 60°} = \frac{\tan 60°-1}{\tan 60°+1}$

SECTION – D (4 marks each)

11. Solve by elimination method
    $x + y = a + b$
    $ax - by = a^2 - b^2$
12. The sum of numerator and denominator of a fraction is 8. If 3 is added to both numerator and denominator, fraction becomes $\frac{3}{4}$. Find fraction.

OR

Prove that $\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$