# St. JOHN'S RESIDENTIAL PUBLIC SCHOOL

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

**Pre – Mid Term Exam - I (2023 – 24)**

**Grade: IX** **Date : / 05/ 23**

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

**Name: _____** **Roll: _____**

## SECTION – A (1 mark each)

1. Find the value of a, b and c in the equation $2x + y = 3$.
2. Rationalise the denominator $\frac{1}{5+\sqrt{2}}$
3. $(x+y)^3 =$ _____
4. Zero is a rational number. (True/False)
5. Degree of polynomial $x^4 - 2x^3 + x^2 + 2x + 3$ is _____

## SECTION – B (2 marks each)

6. Factorise: $x^2 + 11x + 30$
7. If $P(x) = 3x^2 - 5x + 6$. Find P(2) and P(0)
8. Express 0.5in the form of $\frac{p}{q}$, where $q \neq 0$

## SECTION – C (3 marks each)

9. Factorise: $x^2 + \frac{1}{x^2} - 3$
10. Prove that $\frac{2^{x-1}+2^x}{2^{x+1}-2^x} = \frac{3}{2}$

OR

Find three rational numbers lying between $\frac{2}{3}$ *and* $\frac{3}{5}$

## SECTION – D (4 marks each)

11. If $x = 2 - \sqrt{3}$, find the value of $(x - \frac{1}{x})^3$
12. (a) Write degree of each

    i) $2x - \sqrt{5}$

    ii) $x^5 + 3x^2 + 8$

    (b) Express 0.001 as a fraction in simplest form.