Comprehensive Test Series

Number Systems (chapter 1 + 2)

TIME: 1.5hr **MM: 45**

General Instructions:

- All Questions are compulsory.
- Marks are given alongwith the questions individually.
- Use of calculator is not permitted.

Q. 1 Use Euclid's division algorithm to find the HCF of 867 and 255

Q. 2 Show that any positive odd integer is of the form 6q + 1, or 6q + 3, or 6q + 5, where q is some integer.

Q. 3 There is a circular path around a sports field. Sonia takes 18 minutes to derive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. After how many minutes will they meet again at the starting point?

Q.4 Prove that $\sqrt{3}$ is irrational.

Q.5 Find the quadratic polynomial, the sum and the product of whose zeroes are -3 and 2, respectively.

Q 6 Verify that 3, -1, $-\frac{1}{3}$ are the zeroes of the cubic polynomial p (x) = $3x^3 - 5x^2$ -11x -3, and then verify the relationship between the zeroes and the coefficients.

Q.7 Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if you know that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.

Q.8 Divide the polynomial p(x) by the polynomial g(x) and find the quotient and reminders in each of the following:
p (x) = $x^4 - 5x + 6$, g(x) = $2 - x^2$

Q.9 Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial:
$x^3 - 3x + 1$, $x^5 - 4x^3 + x^2 + 3x + 1$

Q. 10 Obtain all other zeroes $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.

Q. 11 If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are a – b, a, a +b, find a and b.

Q.12 If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder comes out to be x + a, find k and a.