ASSIGNMENT – II

(Polynomial)

(1) Obtain the zeroes of quadratic polynomial
$\sqrt{3}\,x^2 - 3x + 4\sqrt{3}$ and verify the relation between zeroes and coefficients.

(2) If α and β are the zeroes of the quadratic polynomial $f(x) = 3x^2 - 5x - 2$

(i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$ (iii) $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$

(3) If α and β are the zeroes of the polynomial $x^2 + x - 6$ find the value $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$

(4) If α and β are the zeroes of the polynomial $f(x) = x^2 - 5x + 4$ find the value $\frac{1}{\alpha} + \frac{1}{\beta} - 2\alpha\beta$

(5) If one zero of the polynomial-
$(a^2 + 9)\,x^2 + 13x + 6a$ is reciprocal of the other find the value of 'a'.

(6) If 1 is a zero of the polynomial $p(x) = ax^2 - 3(a-1)x - 1$ find the value of a.

(7) If α and β are the zeroes of P(t) = $t^2 - 4t + 3$ then the value of $\alpha^4\beta^3 + \alpha^3\beta^4$

(8) The parabola representing a quadratic polynomial $f(x) = ax^2 + bx + c$ opens downward when –
(i) a <0 (ii) a > 0 (iii) a < 1 (d) a >1

(9) Find the zeroes of $f(x) = x^2 - \sqrt[2]{2}x - 16$.

(10) If α and β are the zeroes of the quadratic polynomial $f(t) = t^2 - 4(t+1) - c$ show that (α+1) (β+1) =1–C.

(11) If α and β are the zeroes $f(x) = x^2 - px + q$ prove that $\frac{\alpha^2}{\beta^2} + \frac{\beta^2}{\alpha^2} = \frac{p^4}{q^2} + \frac{4p^2}{q} + 2$.

(12) Find a quadratic polynomial whose zeroes are reciprocals of the zeroes of the polynomial

$f(x) = ax^2 + bx + c$ $a \neq 0$ $c \neq 0$

(13) If one zero of the polynomial $3x^2 - 8x + 2k + 1$ is 7 times the other find the of the value of k.

(14) If α and β are the zeroes of polynomial $f(x) = x^2 - 5x + k$ such that $\alpha - \beta = 1$ find the value of k.

(15) Find the zeroes of the quadratic polynomial $7y^2 - \frac{11}{3}y - \frac{2}{3}$ and verify relation between the zeroes and coefficient.

(16) If α and β are the zeroes of polynomial $p(x) = x^2 - 6x + k$ find the value of k such that $\alpha^2 + \beta^2 = 40$.

(17) Find the value of k such that the polynomial $x^2 - (k+6)x + 2(2k-1)$ has the sum of its zeroes equal to half their product.

(18) If the zeroes of the polynomial $x^2 + px + q$ are double in value to the zeroes of $2x^2 - 5x - 3$ find the value of p and q.

(19) If 1 is a zero of the polynomial $p(x) = ax^2 - 3(a-1)x - 1$ then find the value of a.

(20) If α and β are the zeroes of the polynomial $x^2 + x - 6$ find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$