SUB- MATHEMATICS, CLASS-X
CHAPTER –POLYNOMIAL
(HOTS)

1. Find the condition that zeroes of the polynomial p(t)=$t^3 - at^2 + bt - c$are such that (p-q), p and (p+q).

2. If the dividend polynomial is$x^4 - 6\,x^3 + 16\,x^2 - 25x + 10$ and the divisor polynomial is$x^2 - 2x + k$, then find the values of k and p if $x + p$ is the remainder polynomial.

3. Find the zeroes of the following polynomials:$-4\sqrt{3}x^2 - 5x + 2\sqrt{3}$

4.If$y + p$ is a factor of the polynomial $y^2 + ay + b$ and$y^2 + my + m$, then show that p = $\frac{n-b}{m-a}$.

5. If α,β and γ are zeroes of the cubic polynomial k$t^3 - 5t + 9$, also$\alpha^3 + \beta^3 + \gamma^3$=27, find the value of 'k'.

6. If the zeroes of polynomial $x^3 - ax^2 + bx - c$ are in A.P., then show that 2 $a^3 - 9ab + 27c = 0$.

7. Find the values of 'p' such that the quadratic polynomial (p+1)$x^2 - 3px + p$ has real zeroes.

8. Find the values of 'k' such that the polynomial k$x^2 - 5x + 3$ can be factorised in coincident linear factors.

9. If the difference of the zeroes of the polynomial$x^2 + px - q$ be unity, prove thatp^2+4q^2 = $(1 + 2q)^2$

10. Find the value of 'k' for which the zeroes of the polynomial $5x^2 + (2k + 1)x + k - 2$are α and β, satisfying the relation $2\alpha + 3\beta = 1$.

11. If the zeroes of the polynomial $f(x) = x^3 - 3x^2 + x + 1$ are p-q, p, p + q, then find the values of p and q.

12.If the zeroes of$x^2 - lx + m$ differ by 1, then show that$l^2 - 4m - 1 = 0$.

13. If α and β are the zeroes of the polynomial $x^2 + 4x + 3$,form the polynomial whose zeroes are $1 + \frac{\alpha}{\beta}$ and$1 + \frac{\beta}{\alpha}$.

14. Twice the product of the zeroes of the polynomial $23x^2 - 26x + 161\ is\ 14p$. Find p.

15. The graph of the polynomial p(x) cuts the x-axis at two places and touches at the 3 places. Find the number of zeroes of p(x).

16. The sum and product of zeroes of p(x) = $63x^2 - 7x - 9$ are S and P respectively. Find the value of 27S + 14P.

17. A polynomial of degree 7 is divided by a polynomial of degree 4.Find thedegree of the quotient .

18. If$x^4 + x^3 + 8\,x^2 + ax + b$ is divisible by$x^2 + 1$ then find a + b.