CHAPTER – 2 POLYNOMIALS (Extra Questions)

1. Write the zeros of the polynomial $2x^2 - \frac{7}{2}x + \frac{3}{4}$.
2. Write a quadratic polynomial, the sum and product of whose zeros are –3 and 2 respectively.
3. If one zero of $p(x) = 4x^2 - (8k^2 - 40k)x - 9$ is negative of the other, find values of k.
4. If a and b are zeros of polynomial $6x^2 - 7x - 3$, then form a quadratic polynomial whose zeros are $2a$ and $2b$.
5. If the zeroes of the quadratic polynomial $x^2 + (a + 1)x + b$ are 2 and – 3, then
   (a) $a = -7, b = -1$ (b) $a = 5, b = -1$
   (c) $a = 2, b = -6$ (d) $a = 0, b = -6$
6. What will be the number of zeros of a linear polynomial p(x) if its graph
   (i) passes through the origin.
   (ii) does not intersect or touch x-axis at any point?
7. If a and b are the zeros of the polynomial $x^2 - 5x + m$ such that $a - b = 1$, find m.
8. If a and b are zeroes of the $x^2 + 7x + 7$, find the value of $a^{-1} + b^{-1} - 2ab$
9. p and q are zeroes of the quadratic polynomial $x^2 - (k + 6)x + 2(2k - 1)$. Find the value of k if $2(p + q) = pq$.
10. If m, n are zeroes of $ax^2 - 5x + c$. Find the value of a and c if $m + n = m \times n = 10$.
11. If zeros of $x^2 - kx + 6$ are in the ratio $3 : 2$, find k.
12. If the sum of squares of zeros of the polynomial $x^2 - 8x + k$ is 40, find the value of k.
13. If the product of zeros of $ax^2 - 6x - 6$ is 4, find the value of a. Hence find the sum of its zeros.
14. Find the value of k such that $3x^2 + 2kx + x - k - 5$ has the sum of zeros as half of their product.
15. If a and b are zeros of $x^2 - x - 2$, find a polynomial whose zeros are $(2a + 1)$ and $(2b + 1)$.
16. – 5 is one of the zeros of $2x^2 + px - 15$, zeros of $p(x^2 + x) + k$ are equal to each other. Find the value of k.

17. If a and b are zeros of $y^2 + 5y + m$, find the value of m such that $(a + b)^2 - ab = 24$
18. If α, β are the zeroes of the quadratic polynomial $x^2 + 3x + 6$, find the values of: $(i)\ \frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ $(ii)\ \alpha^2 + \beta^2$
    $(iii)\ \alpha^3 + \beta^3$ $(iv)\ \frac{1}{\alpha^2} + \frac{1}{\beta^2}$
    $(v)\ \frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$ $(vi)\ \sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}}$
19. If α, β are the zeroes of the quadratic polynomial $3x^2 - 6x + 4$, find the values of:

$$\left(\frac{\alpha}{\beta}+\frac{\beta}{\alpha}\right)+2\left(\frac{1}{\beta}+\frac{1}{\alpha}\right)+3\alpha\beta$$

20.If α, β are the zeroes of the quadratic polynomial $2x^2-4x+1$, find the values of $\frac{1}{\alpha+2\beta}+\frac{1}{\beta+2\alpha}$.

21. If α, β are the zeroes of the quadratic polynomial $2x^2-5x+7=0$, then find a polynomial whose zeroes are $2\alpha+3\beta, 3\alpha+2\beta$.

Answer Key

1. $\frac{3}{2}, \frac{1}{4}$
2. $k\,(x^2+3x+2)$
3. k = 0 or -5
4. $3x^2-7x-6$
5. (d) $a=0, b=-6$
6. (i) 1 (ii) 0
7. $m=6$
8. -15
9. $k=7$
10. $a=\frac{1}{2}, c=5$
11. $k=5\ or\ -5$
12. $k=12$
13. -4
14. $k=1$
15. x^2-4x-5
16. $k=\frac{7}{4}$
17. $m=1$
18. (i) $-\frac{1}{2}$ (ii) -3 (iii) 27 (iv) $-\frac{1}{12}$ (v) $\frac{3}{2}$ (vi) $-\frac{\sqrt{6}}{2}$
19. 8
20. $\frac{12}{17}$
21. $2x^2-25x+41$