ASSIGNMENT - 2

Part – I (Polynomials)

1. The value of k for which (–4) is a zero of the polynomial $x^2 – x – (2k +2)$ is
    (a) 3   (b) 9   (c) 6   (d) –1

2. The number of zeroes of the polynomial from the graph is
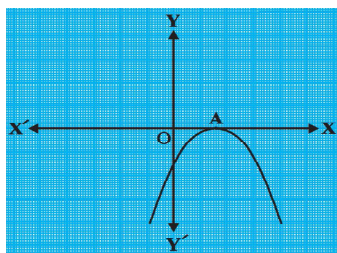
    (a) 0   (b) 1   (c) 2   (d) 3

3. If one of the zero of the quadratic polynomial $x^2 +3 x + k$ is 2, then the value of k is
    (a) 10   (b) –10   (c) 5   (d) –5

4. A quadratic polynomial whose zeroes are –3 and 4 is
    (a) $x^2 – x +12$ (b) $x^2 +x + 12$ (c) $2x^2 + 2x – 24.$ (d) None of the above.

5. The zeroes of the polynomial $x^2 + 7x + 10$ are
    (a) 2 and 5   (b) –2 and 5   (c) –2 and –5   (d) 2 and –5

6. The zeroes of the polynomial $x^2 – 3$ are
    (a) 2 and 5   (b) –2 and 5 (c) –2 and –5   (d) none of the above

7. The number of zeroes of the polynomial from the graph is
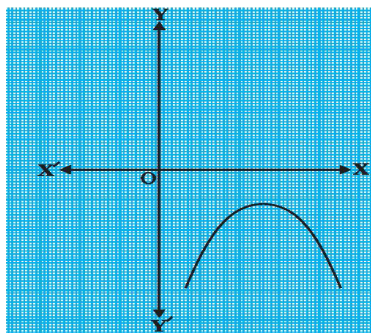
    (a) 0   (b) 1   (c) 2   (d) 3

8. A quadratic polynomial whose sum and product of zeroes

are –3 and 2 is
(a) $x^2 - 3x + 2$　　　(b) $x^2 + 3x + 2$　　　(c) $x^2 + 2x - 3$.
(d) $x^2 + 2x + 3$

9. If the sum of the zeroes of the polynomial $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6, then value of k is
(a) 2　　　　(b) 4　　　　(c) –2　　　　(d) – 4

10. The zeroes of a polynomial $p(x)$ are precisely the x-coordinates of the points, where the graph of $y = p(x)$ intersects the
(a) x – axis　　　(b) y – axis　　(c) origin　　(d) none of the above

11. A quadratic polynomial can have at most …….. Zeroes
(a) 0　　　　(b) 1　　　　(c) 2　　　　(d) 3

12. A cubic polynomial can have at most …….. Zeroes.
(a) 0　　　　(b) 1　　　　(c) 2　　　　(d) 3

13. Which are the zeroes of $p(x) = x^2 - 1$:
(a) 1, –1　　　(b) – 1, 2　　　(c) –2, 2　　(d) –3, 3

14. Which are the zeroes of $p(x) = (x - 1)(x - 2)$:
(a) 1, –2　　　(b) – 1, 2　　　(c) 1, 2　　(d) –1, –2

15. A quadratic polynomial whose sum and product of zeroes are –3 and 4 is
(a) $x^2 - 3x + 12$　　　(b) $x^2 + 3x + 12$　　　(c) $2x^2 + x - 24$. (d) None of the above.

16. A quadratic polynomial whose sum and product of zeroes are 0 and 5 is
(a) $x^2 - 5$　　　(b) $x^2 + 5$　　　(c) $x^2 + x - 5$
(d) none of the above.

17. A quadratic polynomial whose zeroes are 1 and –3 is
(a) $x^2 - 2x - 3$　　　(b) $x^2 + 2x - 3$　　　(c) $x^2 - 2x + 3$
(d) none of the above.

18. A quadratic polynomial whose sum and product of zeroes are –5 and 6 is
(a) $x^2 - 5x - 6$　　　(b) $x^2 + 5x - 6$　　　(c) $x^2 + 5x + 6$ (d) none of the above.

19. Which are the zeroes of $p(x) = x^2 + 3x - 10$:
(a) 5, –2　　　(b) –5, 2　　　(c) –5, –2　　(d) none of these

20. Which are the zeroes of $p(x) = 6x^2 - 7x - 3$:
(a) 5, –2　　　(b) –5, 2　　　(c) –5, –2　　(d) none of these

Part - II

Answers the following questions:

1. What is a quadratic polynomial?
2. What is the degree of a quadratic polynomial?
3. What are the zeroes of a polynomial?
4. How many zeroes a quadratic polynomial can have?
5. What is the shape of curve of a quadratic polynomial graph?
6. What is the relationship between zeroes and coefficients of a quadratic polynomial?
7. Find a quadratic polynomial, the sum and product of whose zeroes are -4 and -3 respectively.
8. State the division algorithm for polynomials.

9. State Remainder Theorem.
10. State Factor Theorem

Part - III

1. If one zero of the polynomial $5z^2 + 13z - p$ is reciprocal of the other, then find p.

2. If the product of two zeroes of polynomial $2x^3 + 3x^2 - 5x - 6$ is 3, then find its third zero.

3. Find the polynomial of least degree which should be subtracted from the polynomial $x^4 + 2x^3 - 4x^2 + 6x - 3$ so that it is exactly divisible by $x^2 - x + 1$.

4. Is polynomial $y^4 + 4y^2 + 5$ have zeroes or not?

5. Write a quadratic polynomial, sum of whose zeroes is $2\sqrt{3}$ and product is 5.

6. Write the zeroes of the polynomial $x^2 + 2x + 1$.

7. A polynomial g(x) of degree zero is added to the polynomial $2x^3 + 5x^2 - 14x + 10$ so that it becomes exactly divisible by $2x - 3$. Find the g(x).

8. Find the zeroes of the quadratic polynomial $x^2 + 5x + 6$ and verify the relationship between the zeroes and the coefficients.

9. Draw graph of the function $f(x) = -2x^2 + 4x$.

10. If $x + a$ is a factor of the polynomial $x^2 + px + q$ and $x^2 + mx + n$ prove that $a = \frac{n-q}{m-p}$

11. Find a cubic polynomial with the sum, sum of the product of its zeroes taken two at a time and product of its zeroes are $3, \frac{-1}{2}, \frac{5}{4}$ respectively.

12. Write cubic polynomial whose zeroes are $(2+\sqrt{5})/2, (2-\sqrt{5})/2$ and 4.

13. α, β, γ are zeroes of cubic polynomial $kx^3 - 5x + 9$.
    If $\alpha^3 + \beta^3 + \gamma^3 = 27$, find the value of k.

14. Two zeroes of cubic polynomial $ax^3 + 3x^2 - bx - 6$ are -1 and -2. Find the third zero and value of a and b.

15. α, β, γ are zeroes of cubic polynomial $x^3 - 2x^2 + qx - r$.
    If $\alpha + \beta = 0$ then show that $2q = r$.

16. α, β, γ are zeroes of polynomial $x^3 + px^2 + qx + 2$ such that α.
    $\beta + 1 = 0$. Find the value of $2p + q + 5$.

17. Using division algorithm, find the quotient and remainder on dividing f(x) by g(x), where $f(x) = 6x^3 + 13x^2 + x - 2$ and $g(x) = 2x + 1$
    (AI CBSE 2008 C)

18. If the polynomial $6x^4 + 8x^3 + 17x^2 + 21x + 7$ is divided by another polynomial $3x^2 + 4x + 1$ then the remainder comes out to be $ax + b$, find 'a' and 'b'
    (CBSE 2009)

19. If α and β are zeroes of the quadratic polynomial $x^2 - 6x + a$; find the value of 'a' if $3\alpha + 2\beta = 20$.
    (CBSE 2010, 2011)

20. Draw the graph of the polynomial $f(x) = x^3 - 4x$.