Chapter- 2

Polynomials

WORKSHEET

1 Mark

(1) The degree of zero polynomial is _____.

(2) _____may be a zero of the polynomial.

(3) One of the zeros of the polynomial $2x^2+7x-4$ is

(a) 2 (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) –2

(4) If $x^{51} + 51$ is divided by x+1, the remainder is

(a) 0 (b) 1 (c) 49 (d) 50

(5) The value of $249^2 - 248^2$ is

(a) 1^2 (b) 477 (c) 487 (d) 497

(6) The coefficient of x is the expansion of $(x+3)^3$ is

(a) 1 (b) 9 (c) 18 (d) 27

(7) When $x^3 - ax^2 + 6x - a$ is divided by x–1, the remainder is

(a) 7–a (b) 7+a (c) 7 – 2a (d) 7 + 2a

2 Marks

(8) If x+y =8 and xy=15, find $x^2 + y^2$.

(9) Factorise: $25x^3 - 121xy^3$.

(10) Without actually calculating the cubes, find the value of $55^3 - 25^3 - 30^3$.

(11) Find if (–2x–5) is a factor of the polynomial $p(x)= 3x^4 + 5x^3 - 2x^2 - 4$ or not.

(12) Show that 2 is not of the polynomial: $p(y) = y^3 - y^2 - y + 1$.

3 Marks

(13) Divide the polynomial $x^4 + x^3 - 2x^2 - x + 1$ by (x +1) and verify remainder by using Remainder Theorem.

(14) The polynomial $p(x)= kx^3 + 9x^2 + 4x - 8$, when divided by (x +30, leaves a remainder 10 (1– k). Find the value of k.

(15) The polynomial $ax^3 + 3x^2 - 26$ and $2x^3 - 5x + a$, when divided by $(x - 4)$, leave the remainder R_1 and R_2 respectively. Find the value of a, if $R_1 + R_2 = 0$.

(16) When the polynomial $kx^4 + 3x^4 + 6$ is divided by $x - 2$, it leaves the remainder R_1. When the polynomial $2x^3 + 17x + k$ is divided by $x - 2$, it leaves the remainder R_2. If $R_1 = 2R_2$, find the value of k.

(17) When the polynomial $4x^3 + 3x^2 - 12ax - 5$ is divided by $x - 1$, the remainder R_1. And when the polynomial $2x^3 + ax^2 - 6x + 2$ is divided by $x + 2$, the remainder is R_2. If $3R_1 + R_2 + 28 = 0$, find the value of a.

4 Marks

(18) If $a + b + c = 9$, $a^2 + b^2 + c^2 = 27$ and $a^3 + b^3 + c^3 = 81$, then find the value of abc.

(19) Prove that:

$(a + b)^3 + (b + c)^3 + (c + a)^3 - 3(a+b)(b+c)(c+a) = 2(a^3 + b^3 + c^3 - 3abc)$

(20) Without actually calculating the cubs, find the values of each of the following: $(-12)^3 + (7)^3 + (5)^3$.

(21) If a, b, c are non-zero and $a + b + c = 0$, then prove that

$$\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1$$

(22) If $a+b+c=6$, find the value of

$(2-a)^3 + (2-b)^3 + (2-c)^3 - 3(2-a)(2-b)(2-c)$.