TOPIC: POLYNOMIALS **CLASS: IX**

SUBJECT: MATHEMATICS

1) Find the zeros of the polynomial (a) $X^2 + 7x + 10$ (b) $x^2 - 25$

2) Factorize: a) $999^2 - 1$ b) $(10.2)^3$ C) 1002 X 998

3) Factorize: a) $x^3 - 3x^2 - 9x - 5$ b) $x^3 + 7x^2 - 21x - 27$

4) Factorise: (a) $3x^2 + 27y^2 + z^2 - 18xy + 6\sqrt{3}yz - 2\sqrt{3}zx$ (b) $27x^3 + 125y^3$ (c) $(2a - 3b + c)^2$

(d) $\frac{1}{64}a^3 + b^3 + 125c^3 - \frac{15}{4}abc$ (e) $[x - 1/x\ y]^3$ (f) $x^4y^4 - xy$

(g) $8x^3 - (2x - y)^3$ (h) $a^6 - b^6$

5) Using factor theorem, Show that (a - b) is the factor of $a(b^2-c^2) + b(c^2-a^2) + c(a^2-b^2)$

6) Factorize: (a) $4\sqrt{3}x^2 + 5x - 2\sqrt{3}$ (b) $21x^2 - 2x + 1/21$ (c) $9(2a - b)^2 - 4(2a - b) - 13$

7) Simplify and factorise $(a + b + c)^2 - (a - b - c)^2 + 4b^2 - 4c^2$

8) Factorise: $(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3$

9) For what value of a is $2x^3 + ax^2 + 11x + a + 3$ exactly divisible by $(2x - 1)$ (-7)

10) If $x - 2$ is a factor of a polynomial $f(x) = x^5 - 3x^4 - ax^3 + 3ax^2 + 2ax + 4$, then find the value of a

11) Find the value of a and b so that $x^2 - 4$ is a factor of $ax^4 + 2x^3 - 3x^2 + bx - 4$ (1, -8)

12) If x = 2 and x = 0 are zeroes of the polynomial $2x^3 - 5x^2 + px + b$, then find the value of p and b

13) Find the value of a and b so that polynomial $x^3 - ax^2 - 13x + b$ is exactly divisible by (x-1) as well as (x+3) (3, 15)

14) The polynomial $x^3 - mx^2 + 4x + 6$ when divided by (x+2) leaves remainder 14 find the value of m

15) If the polynomial $ax^3 + 3x^2 - 13$ and $2x^3 - 5x + a$ when divided by $(x - 2)$ leave the same remainder, find the Value of a

16) If both $(x - 2)$ and $(x - ½)$ are factors of $px^2 + 5x + r$, show that p = r

17) If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is divided by x-1 and x+1 the remainders are 5 and 19 respectively, then find a and b

18) If A and B be the remainders when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by (x + 1) and (x – 2) Respectively and 2A + B = 6, find the value of a (2)

19) Show that x +1 and 2x – 3 are factors of $2x^3 - 9x^2 + x + 12$

20) If sum of remainders obtained by dividing $ax^3 - 3ax^2 + 7x + 5$ by (x-1) and (x+1) is -36 the find a (22/3)

21) By using suitable identity, find the value of:

(a) $(-6)^3 + 13^3 + (-7)^3$ (b) $(-21)^3 + (28)^3$ (c) $(9.8)^3 - (11.3)^3 + (1.5)^3$ (d) $(8/15)^3 + (-1/3)^3 + (-1/5)^3$

22) Find the remainder when $9x^3 - 3x^2 + x - 5$ is divided by $\left[x - \frac{2}{3}\right]$

23) Find the remainder when $x^{51} + 51$ is divided by x + 1 (50)

24) Find the remainder when $x^3 - px^2 + 6x - p$ is divided by $(x - p)$

25) Find the value of $x^3 + y^3 + 15xy - 125$ when x + y = 5 (0)

26 Find the value of $p^3 - q^3$, if p – q = 5/7 and p q = 7/3 (1840/343)

27) If a + b+ c =8, $a^2 + b^2 + c^2 = 30$. Find the value of a b + b c + c a (17)

28) If 2x + 3y = 13 and x y = 6 then, find $8x^3 + 27y^3$ (793)

29) Find the value of $a^3 + b^3 + c^3 - 3abc$, when a + b + c = 8 and a b + b c +c a = 25 (-88)

30) Find the value of $x^3 + y^3 + z^3 - 3xyz$, if x + y + z = 12 and $x^2 + y^2 + z^2 = 70$ (396)

31) If x + y + z = 1, x y + y z + z x = -1 and xyz = -1, find the value of $x^3 + y^3 + z^3$ (1)

32) If $(a + b)^2 = 2a^2 + 2b^2$, show that a = b

33) If (a + b + c) = 0, then prove that $a^3 + b^3 + c^3 = 3abc$

34) Prove that $2x^3 + 2y^3 + 2z^3 - 6xyz = (x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$

35) Give possible expressions for the length and breadth of each of the following rectangles, in which their areas are given $25a^2 - 35a + 12$

36) Simplify: $\left\{\frac{x}{3} + \frac{y}{5}\right\}^3 - \left\{\frac{x}{3} - \frac{y}{5}\right\}^3$ $(2/15x^2y + 2/15y^3)$

37)Simplify : $(a + b + c)^2 + (a - b + c)^2 + (a + b - c)^2$

38)What must be subtracted from $4x^4 - 2x^3 - 6x^2 + x - 5$, so that the result is exactly divisible by $2x^2 + x - 1$ (- 6)

39) find the dimensions of a cuboid, whose volume is $2py^2 + 6py - 20p$

40) If $p(x) = x^2 - 4x + 3$, evaluate $p(2) - p(-1) + p(1/2)$

41) Maximum number of zeroes in a cubic polynomial are:

a) o b) 1 c) 2 d) 3

42) common factor in quadratic polynomials $x^2 + 8x + 15$ and $x^2 + 3x – 10$ is :

a) x + 3 b) x + 5 c) x - 5 d) x -3

43) Which of the following is a polynomial in y ?

a) $y^2 + \sqrt{2}$ b) $y + 1/y + 2$ c) $\sqrt{y} + \sqrt{2y}$ d) $y\sqrt{y} + 1$

44) If $x^3 + 6x^2 + 4x + k$ is exactly divisible by x + 2, then k is equal to :

a) – 6 b) – 7 c) – 8 d) - 10