POLYNOMIALS

FACTOR THEOREM

EXERCISE

Q.1 Examine whether $x + 2$ is a factor of $x^3 + 3x^2 + 5x + 6$ and of $2x + 4$.

Q.2 Use the factor theorem to determine whether $x - 1$ is a factor of

(a) $x^3 + 8x^2 - 7x - 2$

(b) $2\sqrt{2}x^3 + 5\sqrt{2}x^2 - 7\sqrt{2}$

(c) $8x^4 + 12x^3 - 18x + 14$

Q.3 Factorize each of the following expression, given that $x^3 + 13x^2 + 32x + 20$. $(x+2)$ is a factor.

Q.4 Factorize $x^3 - 23x^2 + 142x - 120$

Q.5 Show that $(x - 3)$ is a factor of the polynomial $x^3 - 3x^2 + 4x - 12$

Q.6 Show that $(x - 1)$ is a factor of $x^{10} - 1$ and also of $x^{11} - 1$.

Q.7 Show that $x + 1$ and $2x - 3$ are factors of $2x^3 - 9x^2 + x + 12$.

Q.8 Find the value of k, if $x + 3$ is a factor of $3x^2 + kx + 6$.

Q.9 If $ax^3 + bx^2 + x - 6$ has $x + 2$ as a factor and leaves a remainder 4 when divided by $(x - 2)$, find the values of a and b.

Q.10 If both $x - 2$ and $x - \frac{1}{2}$ are factors of $px^2 + 5x + r$, show that $p = r$.

ANSWER KEY

1. $x + 2$ is a factor of $2x + 4$.

2. (a) Hence (x-1) is a factor of p(x)

   (b)Hence (x–1) is a factor of p(x)

   (c) Hence (x–1) is not a factor of p(x) .

3. (x+2) is a factor of p(x) , (x+2) (x + 10) (x + 1)

4. (x – 1) (x–10) (x– 12)

8. $k = 11$

9. $a = 0$ and $b = 2$.