## Exercise 6.1 Page No: 6.2

**Question 1: Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:**
**(i) $3x^2 – 4x + 15$**
**(ii) $y^2 + 2\sqrt{3}$**
**(iii) $3\sqrt{x} + \sqrt{2x}$**
**(iv) $x – 4/x$**
**(v) $x^{12} + y^3 + t^{50}$**

**Solution:**
**(i)** $3x^2 – 4x + 15$
It is a polynomial of x.

**(ii)** $y^2 + 2\sqrt{3}$
It is a polynomial of y.

**(iii)** $3\sqrt{x} + \sqrt{2x}$
It is not a polynomial since the exponent of $3\sqrt{x}$ is a rational term.

**(iv)** $x – 4/x$
It is not a polynomial since the exponent of $– 4/x$ is not a positive term.

**(v)** $x^{12} + y^3 + t^{50}$

It is a three variable polynomial, x, y and t.

**Question 2: Write the coefficient of $x^2$ in each of the following:**
**(i) $17 – 2x + 7x^2$**
**(ii) $9 – 12x + x^3$**
**(iii) $\pi/6\ x^2 – 3x + 4$**
**(iv) $\sqrt{3}x – 7$**

**Solution:**
**(i)** $17 – 2x + 7x^2$
Coefficient of $x^2 = 7$

**(ii)** $9 – 12x + x^3$
Coefficient of $x^2 = 0$

**(iii)** $\prod/6\ x^2 - 3x + 4$
Coefficient of $x^2 = \prod/6$

**(iv)** $\sqrt{3}x - 7$
Coefficient of $x^2 = 0$

**Question 3: Write the degrees of each of the following polynomials:**
**(i) $7x^3 + 4x^2 - 3x + 12$**
**(ii) $12 - x + 2x^3$**
**(iii) $5y - \sqrt{2}$**
**(iv) 7**
**(v) 0**

**Solution**:
As we know, degree is the highest power in the polynomial
(i) Degree of the polynomial $7x^3 + 4x^2 - 3x + 12$ is 3
(ii) Degree of the polynomial $12 - x + 2x^3$ is 3
(iii) Degree of the polynomial $5y - \sqrt{2}$ is 1
(iv) Degree of the polynomial 7 is 0
(v) Degree of the polynomial 0 is undefined.

**Question 4: Classify the following polynomials as linear, quadratic, cubic and biquadratic polynomials:**
**(i) $x + x^2 + 4$**
**(ii) $3x - 2$**
**(iii) $2x + x^2$**
**(iv) 3y**
**(v) $t^2 + 1$**
**(vi) $7t^4 + 4t^3 + 3t - 2$**

**Solution:**
**(i)** $x + x^2 + 4$: It is a quadratic polynomial as its degree is 2.
**(ii)** $3x - 2$ : It is a linear polynomial as its degree is 1.
**(iii)** $2x + x^2$: It is a quadratic polynomial as its degree is 2.
**(iv)** 3y: It is a linear polynomial as its degree is 1.
**(v)** $t^2 + 1$: It is a quadratic polynomial as its degree is 2.
**(vi)** $7t^4 + 4t^3 + 3t - 2$: It is a biquadratic polynomial as its degree is 4.