

### Section-B

- Q.2 Show that  $z = 1 \pm i$  satisfies the equation  $z^2 - 2z + 2 = 0$
- Q.3 Evaluate: (i)  $i^{10} + (-i)^{12}$  (ii)  $(-1)^{16} - (-1)^6$  (iii)  $(i)^{11} \cdot (-i)^{14}$
- Q.4 Expand by means of the binomial theorem:  
(i)  $(2x - 3y)^4$  (ii)  $(3x^2 - 2y^3)^5$

Q.5 Prove that:

(i)  $3 + 6 + 9 + \dots + 3n = \frac{3}{2} n(n + 1)$

(ii)  $2 + 6 + 18 + \dots + 2 \cdot 3^{n-1} = 3^n - 1$

Q.6 Expand by means of the binomial theorem:

(i)  $(2x - 3y)^4$  (ii)  $(3x^2 - 2y^3)^5$

Q.7 Specify the type of each of the following:

(i)  $\begin{bmatrix} 0 & i \\ i & 0 \end{bmatrix}$  (ii)  $\begin{bmatrix} \sqrt{3} \\ 4 \\ 7 \end{bmatrix}$

Q.8 Classify the following:

(i) Velocity (ii) Mass (iii) Acceleration

Q.9 Simplify the following:

(i)  $(-6, 3) + (4, -2)$  (ii)  $(8, -4) + ((-2, 2)$  (iii)  $(2, 3) \div (4, 5)$

Q.10 Find the sum of  $n$  terms of series:

(i)  $3n^2 + n + 1$  (ii)  $n^2 + 4n + 1$

Q.11 solve the following quadratic equation:

(i)  $z^2 + 4z + 5 = 0$  (ii)  $34x^2 + -6z = -1$  (iii)  $z^2 + 64 = 1$

Q.12 Find the transpose of each of the following matrices:

(i)  $\begin{bmatrix} -4 & 3 & 6 \end{bmatrix}$  (ii)  $\begin{bmatrix} 2i & 5i & -3i \\ 0 & -6i & 2i \end{bmatrix}$

Q.13 Let  $A = \begin{bmatrix} 3 & -4 & 1 \\ 4 & 5 & 7 \\ -2 & -3 & 8 \end{bmatrix}$ ,  $B = \begin{bmatrix} 3 & 4 & -1 \\ 2 & -3 & 5 \end{bmatrix}$  and  $C = \begin{bmatrix} -5 & 5 \\ 6 & -3 \\ 2 & 7 \end{bmatrix}$

Q.14 Classify the following quantities are scalars or vectors

(i) Force (ii) Speed (iii) Velocity (iv) Area

(v) Work (vi) Volume (vii) weight (viii) Mass

### Section-C

Q.15 If  $A = \begin{bmatrix} -2 & 1 & 0 \\ -1 & 4 & 3 \\ 0 & 8 & 5 \end{bmatrix}$  then find,  $A^2 - 5A + 4I$ .

Q.16 If  $f(x) = x^3$ , find the values of:

(i)  $f(2)$  (ii)  $f(-10)$  (c)  $f(\frac{1}{2})$

Q.17 Solve the graph of the following:

(i)  $3x - y \leq 5$  (ii)  $x - 3y \geq 5$

Q.18 Sketch the graph of the following functions:

(i)  $y = 5x + 2$  (ii)  $y = x^2 - 5$  (iii)  $y = x^5$