



- 24) Show that the cube roots of unity forms an abelian group w.r.t multiplication.
- 25) Prove that $G = \{2^n : n \in \mathbb{Z}\}$ is an abelian group under multiplication.
- 26) Find the projection of $\vec{a} = 2\hat{i} - \hat{j} + \hat{k}$ on $\vec{b} = \hat{i} - 2\hat{j} + \hat{k}$.
- 27) If the vectors $2\hat{i} - 3\hat{j} + m\hat{k}$, $2\hat{i} + \hat{j} - \hat{k}$ and $6\hat{i} - \hat{j} + 2\hat{k}$ are coplanar, find m.
- 28) Show that the points A(1, 2, 3), B (2, 3, 1) and C(3, 1, 2) are vertices of an equilateral triangle, using vector method.

SECTION - D

IV. Answer **any four** of the following. **Each** question carries **5** marks. **(4×5=20)**

- 29) Prove that the points (6, 4), (7, -2), (5, 1), (4, 7) form vertices of a parallelogram.
- 30) Derive the equation of the straight line whose X-intercept is 'a' and Y-intercept is 'b'.
- 31) Find 'k' for which the lines $2x - ky + 1 = 0$ and $x + (k + 1)y - 1 = 0$ are perpendicular.
- 32) Find the equation of the Locus of a point which moves such that its distance from X-axis is twice its distance from Y-axis.
- 33) The three vertices of a parallelogram taken in order are (8, 5), (-7, -5) and (-5, 5). Find the co-ordinate of the fourth vertex.
- 34) Find the ratio in which the point P(2, 7) divides the line joining of the points A(8, 9) and B(-7, 4).

