# VECTOR ALGEBRA

## VECTOR (OR CROSS) PRODUCT OF TWO VECTOR

## EXERCISE

**Q.1** Let $\vec{u}, \vec{v}, \overrightarrow{W}$ such that $\overrightarrow{W}$ is the cross product of $\vec{u}, \vec{v}$, and $\overrightarrow{W}$ is maximum when $\vec{u}$, and $\vec{v}$, are

(A) Parallel to each other (B) At angel 30°

(C) Perpendicular to each other (D) The liner pair

**Q.2** Two vectors have their scalar magnitude as $|a = 2\sqrt{3}$ and $|b| = 4$, while the angle between the two vectors is 60∘.

Calculate the cross product of two vectors.

**Q.3** Find the cross product of two vectors $\vec{a} = (3,4,5)$ and $\vec{b} = (7,8,9)$

**Q.4** If $\vec{a} = (2, -4,4)$ and $\vec{b} = (4,0,3)$, find the angle between them.

**Q.5** Find $\vec{a} \times \vec{b}$ if $\vec{a} = 2\hat{i} + \hat{k}$ and $\vec{b} = \hat{i} + \hat{k} + \hat{k}$.

**Q.6** Let $i + 3j + 5k$ and $5i + 6j - 6k$ be the two vectors.

## ANSWER KEY

**1.** (C) Perpendicular to each other

**2.** The cross product is 12n.

**3.** $\vec{a} \times \vec{b} = -4\hat{i} + 8\hat{j} - 4\hat{k}$

**4.** The angle between the vectors is 48∘.

**5.** $= -\hat{i} - \hat{j} + 2\hat{k}$