VECTORS

1 12^{th} Maths - EXERCISE-10.4

1. Given that $\vec{a} . \vec{b} = 0$ and $\vec{a} \times \vec{b} = 0$ .What can you conclude about the vectors $\vec{a}$ and $\vec{b}$.

   Solution: Given

   (a) $\mathbf{a}^\top \mathbf{b} = 0$

      i. either $|\mathbf{a}| = 0$ or $|\mathbf{b}| = 0$ or $\mathbf{a} \perp \mathbf{b}$.

   (b) $\mathbf{a} \times \mathbf{b} = 0$

      i. either $|\mathbf{a}| = 0$ or $|\mathbf{b}| = 0$ or $\mathbf{a} \parallel \mathbf{b}$.

   But,$\mathbf{a}$ and $\mathbf{b}$ cannot be perpendicular and parallel simultaneously.
   Hence, $|\mathbf{a}| = 0$ or $|\mathbf{b}| = 0$.