

Let the vectors  $\vec{PQ}$ ,  $\vec{QR}$ ,  $\vec{RS}$ ,  $\vec{ST}$ ,  $\vec{TU}$  and  $\vec{UP}$  represent the sides of a regular hexagon.

**Statement I**  $\vec{PQ} \times (\vec{RS} + \vec{ST}) \neq \vec{0}$ .

because

**Statement II**  $\vec{PQ} \times \vec{RS} = \vec{0}$  and  $\vec{PQ} \times \vec{ST} \neq \vec{0}$ .

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Since,  $\vec{\mathbf{PQ}}$  is not parallel to  $\vec{\mathbf{TR}}$ .

$\therefore \vec{\mathbf{TR}}$  is resultant of  $\vec{\mathbf{RS}}$  and  $\vec{\mathbf{ST}}$   
vectors.  $\Rightarrow \vec{\mathbf{PQ}} \times (\vec{\mathbf{RS}} + \vec{\mathbf{ST}}) \neq \vec{\mathbf{0}}$ .

But for Statement II, we have

$$\vec{\mathbf{PQ}} \times \vec{\mathbf{RS}} = \vec{\mathbf{0}}$$

which is not possible as  $\vec{\mathbf{PQ}}$  not parallel to  $\vec{\mathbf{RS}}$ .

