Vectors - Class XII

Related Questions with Solutions

Questions

Quetion: 01

If $\vec{a}=\hat{i}+\hat{j}+\hat{k}, \vec{b}=4\hat{i}+3\hat{j}+4\hat{k}$ and $\vec{c}=\hat{i}+\alpha\hat{j}+\beta\hat{k}$ are linearly dependent vectors & $|\overrightarrow{c}|=\sqrt{3}$, then

A. $\alpha=1, \beta=-1$
B. $\alpha=1, \beta=\pm 1$

C. $\alpha=-1, \beta=\pm 1$
D. $\alpha=\pm 1, \beta=1$

Solutions

Solution: 01

$\overrightarrow{c}=\hat{\imath}+\alpha\hat{j}+\beta\hat{\mathrm{k}}$
$|\overrightarrow{c}|=\sqrt{3}$
$1+\alpha^2+\beta^2=3 \Rightarrow \alpha^2+\beta^2=2$

$$\begin{vmatrix} 1 & 1 & 1 \\ 4 & 3 & 4 \\ 1 & \alpha & \beta \end{vmatrix}=0$$

$3\beta-4\alpha-4\beta+4+4\alpha-3=0$
$-\beta+1=0$
$\beta=1$
$\alpha^2+1=2$
$\alpha=\pm 1$

Correct Options

Answer:01
Correct Options: D