Given,
$\alpha = 90°$,
$\beta = 135°$,
$\gamma = 45°$

i.e l=cos90°=0, m=cos135°= $\frac{-1}{\sqrt{2}}, n = cos45°= \frac{1}{\sqrt{2}}$ (1)

Also,we know that,

$\hat{a} = \frac{\vec{a}}{|a|}$=l$\hat{i} + m\hat{j} + n\hat{k}$ (2)

Now, $\mid a \mid = \sqrt{0^2 + (\frac{-1}{\sqrt{2}})^2 + (\frac{1}{\sqrt{2}})^2}$

$\implies \quad \mid a \mid = 1$

Hence,from equation(1)and(2) we have the unit vector: $\hat{a} = \frac{-1}{\sqrt{2}}\vec{j} + \frac{1}{\sqrt{2}}\vec{k}$