	ANSWER KEY of class XII VECTORS
1	$\frac{\pi}{4}$
2	8
3	$\theta = 60$
4	$5\sqrt{2}$
5	$\theta = \cos^{-1}\left(\frac{-17}{\sqrt{565}}\right)$
6	Let $\vec{c} = x\hat{i} + y\hat{j} + z\hat{k}$ And $\vec{a} = \hat{i} + \hat{j} + \hat{k}$ and $\vec{b} = \hat{j} - \hat{k}$ For $\vec{a} \times \vec{c} = \vec{b}$, $\begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & 1 & 1 \\ x & y & z \end{vmatrix} = \hat{j} - \hat{k}$ $\Rightarrow \hat{i}(z-y) - \hat{j}(z-x) + \hat{k}(y-x) = \hat{j} - \hat{k}$ $\therefore z - y = 0$ ...(i) x - z = 1 ...(ii) x - y = 1 ...(iii) Also, $\vec{a}.\vec{c} = 3$ $\left(\hat{i} + \hat{j} + \hat{k}\right).\left(x\hat{i} + y\hat{j} + z\hat{k}\right) = 3$ $\Rightarrow x + y + z = 3$ ...(iv) On adding Eqs. (ii) and (iii), we get 2x - y - z = 2 ...(v) On solving Eqs. (iv) and (v), we get $x = \frac{5}{3}$ $\therefore y = \frac{5}{3} - 1 = \frac{2}{3}$ and $z = \frac{2}{3}$ Now, $\vec{c} = \frac{5}{3}\hat{i} + \frac{2}{3}\hat{j} + \frac{2}{3}\hat{k}$ $= \frac{1}{3}\left(5\hat{i} + 2\hat{j} + 2\hat{k}\right)$

7	Given a.b = 0 = a.c Thus, a is perpendicular to b and c. A unit vector perpendicular to b and c $= \pm \frac{(\mathbf{b} \times \mathbf{c})}{\lvert\mathbf{b} \times \mathbf{c}\rvert}$ $= \pm \frac{(\mathbf{b} \times \mathbf{c})}{\lvert\mathbf{b}\rvert \lvert\mathbf{c}\rvert \sin\left(\frac{\pi}{6}\right)}$ $= \pm \frac{(\mathbf{b} \times \mathbf{c})}{1/2}$ $= \pm 2(b \times c)$.