DPP - 4(Vectors)

Video Solution on Website:- https://physicsaholics.com/home/courseDetails/43

Video Solution on YouTube:- https://youtu.be/Dfcht3Z-kgQ

Written Solution on Website:- https://physicsaholics.com/note/notesDetalis/84

Q 1. If $\vec{A} \times \vec{B} = \vec{C}$, then which of the following statements is wrong:
(a) $\vec{C} \perp \vec{A}$
(b) $\vec{C} \perp \vec{B}$
(c) $\vec{C} \perp (\vec{A} + \vec{B})$
(d) $\vec{C} \perp (\vec{A} \times \vec{B})$

Q 2. If two vectors $2\hat{\imath} + 3\hat{\jmath} - \hat{k}$ and $-4\hat{\imath} - 6\hat{\jmath} - \lambda\hat{k}$ are parallel to each other then value of λ be:
(a) 0
(b) -2
(c) 3
(d) -4

Q 3. What is the value of $(\vec{A} + \vec{B}) \cdot (\vec{A} \times \vec{B}) =$?
(a) 0
(b) $A^2 - B^2$
(c) $A^2 + B^2 + 2AB$
(d) None of these

Q 4. Let $\vec{A} = \hat{\imath} + \hat{\jmath} + \hat{k}, \vec{B} = \hat{\jmath} - \hat{k}$. If $\vec{C}$ is a vector satisfying $\vec{A} \times \vec{C} = \vec{B}$ and $\vec{A} \cdot \vec{C} = 3$, then $\vec{C}$ is:
(a) $\frac{1}{3}(5\hat{\imath} + 2\hat{\jmath} + 2\hat{k})$
(b) $\frac{1}{3}(5\hat{\imath} - 2\hat{\jmath} - 2\hat{k})$
(c) $3\hat{\imath} - \hat{\jmath} - \hat{k}$
(d) None of these

Q 5. The vector perpendicular to the vectors $4\hat{\imath} - \hat{\jmath} + 3\hat{k}$ and $-2\hat{\imath} + \hat{\jmath} - 2\hat{k}$ whose magnitude is 9:
(a) $3\hat{\imath} + 6\hat{\jmath} - 6\hat{k}$
(b) $3\hat{\imath} - 6\hat{\jmath} + 6\hat{k}$
(c) $-3\hat{\imath} + 6\hat{\jmath} + 6\hat{k}$
(d) None of these

Q 6. Find $\vec{a} \times (\vec{b} + \vec{c}) + \vec{b} \times (\vec{c} + \vec{a}) + \vec{c} \times (\vec{a} + \vec{b}) =$?
(a) $\vec{a} + \vec{b} + \vec{c}$
(b) $\vec{a} \cdot (\vec{a} + \vec{b} + \vec{c})$
(c) $(\vec{a} \cdot \vec{b} \cdot \vec{c}) \times (\vec{a} + \vec{b} + \vec{c})$
(d) zero

Q 7. Find $[2\hat{\jmath} \times (3\hat{\imath} - 4\hat{k})] \cdot [(\hat{\imath} - 2\hat{k}) \times \hat{k}] =$?
(a) 0
(b) $\hat{\imath} + \hat{\jmath} - \hat{k}$
(c) $2\hat{\imath} + \hat{\jmath} - 3\hat{k}$
(d) 16

Q 8. Find $\hat{\imath} \cdot (\hat{\jmath} \times \hat{k}) + (\hat{\imath} \times \hat{k}) \cdot \hat{\jmath} =$?
(a) $2\hat{\imath} + \hat{\jmath}$
(b) 1
(c) 0
(d) $\hat{\imath} + \hat{\jmath} + \hat{k}$

Q 9. If $|\vec{a}| = 13$, $|\vec{b}| = 5$ and $\vec{a} \cdot \vec{b} = 30$, then $|\vec{a} \times \vec{b}| =$?

(a) 30

(b) $\frac{30}{25}\sqrt{233}$

(c) $\frac{30}{33}\sqrt{193}$

(d) $\frac{65}{13}\sqrt{133}$

Q 10. Vector $\vec{A}$ & $\vec{B}$ have scalar product 6.00 and their vector product has magnitude +9.00 What is the angle between these two vectors?

(a) $\tan^{-1}(1.5)$

(b) $\tan^{-1}(3)$

(c) $\tan^{-1}(2)$

(d) $\tan^{-1}\left(\frac{2}{3}\right)$

Answer Key

Q.1 d	Q.2 b	Q.3 a	Q.4 a	Q.5 c
Q.6 d	Q.7 a	Q.8 c	Q.9 d	Q.10 a