ARJUNA (NEET)

Vector

DPP-13

1. The magnitude of a vector cannot be
(A) positive (B) zero
(C) negative (D) unity

2. Which of the following is not a vector ?
(A) Angular momentum
(B) Angular impulse
(C) Kinetic energy
(D) Magnetic intensity

3. The square of resultant of two equal forces is equal to three times their product. Angle between the forces in radian is
(A) π (B) $\pi/2$
(C) $\pi/3$ (D) $\pi/4$

4. The vectors $\vec{A}$ and $\vec{B}$ are such that $\vec{A} + \vec{B} = \vec{C}$ and $A^2 + B^2 = C^2$. Angle between the positive directions of vectors $\vec{A}$ and $\vec{B}$ is equal to
(A) π radian (B) $\pi/2$ radian
(C) $\pi/3$ radian (D) $\pi/4$ radian

5. For what angle between the two vectors, their resultant is maximum ?
(A) 180° (B) zero
(C) 90° (D) 45°

6. For what angle between the two vectors is their resultant minimum?
(A) π radian (B) π radian
(C) zero (D) $\pi/2$ radian

7. The angle between vectors $(\hat{\imath} + \hat{\jmath})$ and $(\hat{\jmath} + \hat{k})$ is :
(A) 90° (B) 180°
(C) 0° (D) 60°

8. The angle between two vectors given by $(6\hat{\imath} + 6\hat{\jmath} - 3\hat{k})$ and $(7\hat{\imath} + 4\hat{\jmath} + 4\hat{k})$ is :
(A) $\cos^{-1}\left(\frac{1}{2}\right)$ (B) $\cos^{-1}\left(\frac{1}{3}\right)$
(C) $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$ (D) $\cos^{-1}\left(\frac{2}{3}\right)$

9. If $\hat{\imath}$, $\hat{\jmath}$ and $\hat{k}$ are unit vectors along X, Y and Z axis respectively, then tick the wrong statement :
(A) $\hat{\imath} \cdot \hat{\imath} = 1$ (B) $\hat{\imath} \times \hat{\jmath} = \hat{k}$
(C) $\hat{\imath} \cdot \hat{\jmath} = 0$ (D) $\hat{\imath} \times \hat{k} = -\hat{\imath}$

10. Given : $\vec{C} = \vec{A} + \vec{B}$. Also, the magnitude of $\vec{A}$, $\vec{B}$ and $\vec{C}$ are 12, 5 and 13 units respectively. The angle between $\vec{A}$ and $\vec{B}$ is
(A) 0° (B) $\pi/4$
(C) $\pi/2$ (D) π

11. What is the value of $(\vec{A} + \vec{B}) \bullet (\vec{A} \times \vec{B})$?
(A) 0 (B) $A^2 - B^2$
(C) $A^2 + B^2 + 2AB$ (D) none of these

12. If $\vec{A} \times \vec{B} = \vec{0}$ and $\vec{B} \times \vec{C} = \vec{0}$, then the angle between $\vec{A}$ and $\vec{C}$ may be :
(A) zero (B) $\pi/4$
(C) $\pi/2$ (D) none of these

13. Find the magnitude of $3\hat{\imath} + 2\hat{\jmath} + \hat{k}$?
(A) $\sqrt{14}$ (B) $\sqrt{13}$
(C) $\sqrt{12}$ (D) $\sqrt{10}$

Comprehension 14 to 15 :
If $\vec{A} = \hat{\imath} + \hat{\jmath} + \hat{k}$ and $\vec{B} = 2\hat{\imath} + \hat{\jmath}$ find

14. Find the $\vec{A} \cdot \vec{B}$
(A) 3 (B) 4
(C) 5 (D) 6

15. Find the $\vec{A} \times \vec{B}$

(A) $-\hat{i} + 2\hat{j} + \hat{k}$ (B) $\hat{i} + 2\hat{j} + \hat{k}$

(C) $-\hat{i} + 2\hat{j} - \hat{k}$ (D) $-\hat{i} - 2\hat{j} - \hat{k}$

16. The vector sum of the forces of 10 newton and 6 newton can be :

(A) 2 N (B) 8 N

(C) 18 N (D) 20 N

17. Vector sum of two forces of 10 N and 6 N cannot

(A) 4 N (B) 8 N

(C) 12 N (D) 2 N

18. Which of the following pair of forces will never give resultant force of 2 N:

(A) 2 N and 2 N (B) 1 N and 1 N

(C) 1 N and 3 N (D) 1 N and 4 N

19. Given : $\vec{A} = 2\hat{i} + 3\hat{j} + \hat{k}$ and $\vec{B} = 5\hat{i} - 6\hat{j}$. The magnitude of $\vec{A} + \vec{B}$ is

(A) 4 units (B) 10 units

(C) $\sqrt{59}$ units (D) $\sqrt{61}$ units

20. Given : $\vec{A} = 2\hat{i} - \hat{j} + 2\hat{k}$ and $\vec{B} = -\hat{i} - \hat{j} + \hat{k}$. The unit vector of $\vec{A} - \vec{B}$ is

(A) $\frac{3\hat{i} + \hat{k}}{\sqrt{10}}$ (B) $\frac{3\hat{i}}{\sqrt{10}}$

(C) $\frac{\hat{k}}{\sqrt{10}}$ (D) $\frac{-3\hat{i} - \hat{k}}{\sqrt{10}}$

21. The unit vector along $\hat{i} + \hat{j}$ is :

(A) $\hat{k}$ (B) $\hat{i} + \hat{j}$

(C) $\frac{\hat{i} + \hat{k}}{\sqrt{2}}$ (D) $\frac{\hat{i} + \hat{j}}{2}$

22. If a unit vector is represented by $0.5\hat{i} - 0.8\hat{j} + c\hat{k}$, then the value of '$c$' is :

(A) 1 (B) $\sqrt{0.11}$

(C) $\sqrt{0.01}$ (D) $\sqrt{0.39}$

23. If a vector $2\hat{i} + 3\hat{j} + 8\hat{k}$ is perpendicular to the vector $4\hat{i} - 4\hat{j} + \alpha\hat{k}$, then the value of α is :

(A) -1 (B) $\frac{1}{2}$

(C) $-\frac{1}{2}$ (D) 1

24. If the angle between the vectors $\vec{A}$ and $\vec{B}$ is θ, the value of the product $(\vec{B} \times \vec{A}).\vec{A}$ is equal to :

(A) $BA^2 \cos\theta$ (B) $BA^2 \sin\theta$

(C) $BA^2 \sin\theta \cos\theta$ (D) zero

ANSWERS KEY

1. **(C)**
2. **(C)**
3. **(C)**
4. **(B)**
5. **(B)**
6. **(A)**
7. **(D)**
8. **(D)**
9. **(D)**
10. **(C)**
11. **(A)**
12. **(A)**
13. **(A)**
14. **(A)**
15. **(D)**
16. **(B)**
17. **(D)**
18. **(D)**
19. **(C)**
20. **(A)**
21. **(C)**
22. **(B)**
23. **(B)**
24. **(D)**

Note - If you have any query/issue

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