Objective Type Question

Q.1 Each questions has four possible answers. Choose the correct answer and encircle it.

__1. Magnitude of the vector $2i - 2j - k$ is:
(a) 4 (b) 3 (c) 2 (d) 1

__2. Unit vector of $i + j + k$ is:
(a) $i + j + k$ (b) $\frac{1}{3}(i + j + k)$
(c) $\frac{1}{\sqrt{3}}(i + j + k)$ (d) $\frac{1}{2}(i + j + k)$

__3. Unit vector of $i - 2j - 2k$ is:
(a) $i - 2j - 2k$ (b) $\frac{1}{3}(i - 2j - 2k)$
(c) $\frac{1}{\sqrt{3}}(i - 2j - 2k)$ (d) $\frac{1}{2}(i - 2j - 2k)$

__4. If $\hat{i}$, $\hat{j}$ and k are orthogonal unit vectors, then $j \times i$ is:
(a) k (b) $-k$ (c) 1 (d) -1

__5. The magnitude of a vector $\hat{i} - 3\hat{j} + 5k$ is:
(a) 3 (b) 25 (c) 35 (d) $\sqrt{35}$

__6. In l, m and n are direction cosine of a vector, then:
(a) $l^2 - m^2 - n^2 = 1$ (b) $l^2 - m^2 + n^2 = 1$
(c) $l^2 + m^2 - n^2 = 1$ (d) $l^2 + m^2 + n^2 = 1$

__7. If θ is the angle between the vector $\vec{a}$ and $\vec{b}$, then $\cos\theta$ is:
(a) $\vec{a} \cdot \vec{b}$ (b) $\frac{\vec{a} \cdot \vec{b}}{|\vec{a}||\vec{b}|}$
(c) $\frac{\vec{a} \cdot \vec{b}}{|\vec{a}|}$ (d) $\frac{\vec{a} \cdot \vec{b}}{|\vec{b}|}$

__8. If $\vec{a} = a_1j + a_2j + a_3k$, $\vec{b} = b_1i + b_2j + b_3k$, then $\vec{a} \cdot \vec{b}$ is:
(a) $a_1b_1j + a_2b_2j + a_3b_3k$ (b) $a_1b_1 + a_2b_2 + a_3b_3$
(c) $a_1b_2j + a_2b_3j + a_3b_1k$ (d) None of these

__9. $\vec{a} \cdot \vec{b} = 0$ implies that $\vec{a}$ and $\vec{b}$ are:
(a) Perpendicular (b) Parallel

(c) Non-parallel (d) Oblique

__10. If $\vec{a} = i + j + k$ and $\vec{b} = -i - j - mk$ are perndicular then m will be equal to:

(a) 1 (b) -2 (c) ± 1 (d) ± 3

__11. $\vec{a} \cdot \vec{b}$ is a:

(a) Vector quantity (b) Scalar quantity
(c) Unity (d) None of these

__12. $\vec{a} \cdot \vec{a}$ is equal to:

(a) 1 (b) a^2 (c) $\left|\vec{a}\right|$ (d) None of these

__13. If $\vec{a} = 2i - 3j + k$ and $\vec{b} = -i + 2j + 7k$ then $\vec{a} \cdot \vec{b}$ is equal to:

(a) -1 (b) -2 (c) -3 (d) -4

__14. If $\vec{a} \times \vec{b} = 0$ then $\vec{a}$ and $\vec{b}$ is:

(a) Non-parallel (b) Parallel
(c) Perpendicular (d) None of these

__15. The cross product of two vectors $\vec{a}$ and $\vec{b}$ is:

(a) $\left|\vec{a}\right|\left|\vec{b}\right| \cos\theta$ (b) $\left|\vec{a}\right|\left|\vec{b}\right| \sin\theta$

(c) $\left|\vec{a}\right|\left|\vec{b}\right| \sin\theta\, \hat{n}$ (d) $\left|\vec{a}\right|\left|\vec{b}\right| \cos\theta\, \hat{n}$

__16. If $\hat{n}$ is the unit vector in the direction of $\vec{a} \times \vec{b}$, then $\hat{n}$ is:

(a) $\dfrac{\vec{a} \times \vec{b}}{\left|\vec{a}\right|\left|\vec{b}\right|}$ (b) $\dfrac{\vec{a} \cdot \vec{b}}{\left|\vec{a}\right|\left|\vec{b}\right|}$ (c) $\dfrac{\left|\vec{a} \times \vec{b}\right|}{\left|\vec{a}\right|\left|\vec{b}\right| \sin\theta}$ (d) $\dfrac{\vec{a} \times \vec{b}}{\left|\vec{a} \times \vec{b}\right|}$

__17. $\left|\vec{a} \times \vec{b}\right|$ is area of the figure called:

(a) Triangle (b) Rectangle (c) Parallelogram (d) Sector

__18. $\vec{a} \times \vec{b}$ is equal to:

(a) $-\vec{b} \times \vec{a}$ (b) $\vec{b} \times \vec{a}$ (c) $\left|\vec{a} \times \vec{b}\right|$ (d) $\left|\vec{b} \times \vec{a}\right|$

__19. If $\vec{a}$ and $\vec{b}$ are collinear vectors, then:

(a) $\vec{a} \times \vec{b} = 0$ (b) $\vec{a} \cdot \vec{b} = 0$
(c) $\vec{a} - \vec{b} = 0$ (d) $\vec{a} + \vec{b} = 0$

__20. $\left|\vec{a} \times \vec{b}\right|$ is a:

(a) Vector quantity (b) Scalar quantity
(c) Unity (d) None of these

Answers

1.	b	2.	c	3.	b	4.	b	5.	d
6.	d	7.	b	8.	b	9.	a	10.	c
11.	b	12.	b	13.	a	14.	b	15.	c
16.	d	17.	c	18.	a	19.	a	20.	b