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Scalar and vector

1. If $\vec{c} = \vec{a} + \vec{b}$ and $c=a+b$, then find angle between \vec{a} & \vec{b}
(a) 30° (b) 90° (c) 0° (d) None
2. If $|\vec{a} + \vec{b}| = |\vec{a} - \vec{b}|$, then find the angle between \vec{a} and \vec{b}
(a) $q=30$ (b) $q=120$ (c) $q=90$ (d) None
3. Among the following select the scalar quantity ,
(a) Gravitational (b) current density
(c) Electromotive force
(d) None
4. In which quadrant $\vec{a} = -3\hat{i} + 4\hat{j}$ lies
(a) 1st (b) 2nd (c) 3rd (d) 4th
5. Among these, select velocity quantity
(a) velocity (b) force (c) angular momentum
(d) all of these
6. The equation $\vec{a} + \vec{a} = \vec{a}$
(a) meaning less (b) always's true
(c) it is true for only some value of AA
(d) None
7. If $\vec{a} + \vec{b} = \vec{c}$, then $c = \sqrt{a^2 + b^2}$, then ' θ ' equal to
(a) $\theta = 30^\circ$ (b) $\theta = 90^\circ$ (c) $\theta = 180^\circ$
(d) $\theta = 120^\circ$
8. Among these, choose polar vector
(a) angular momentum (b) Linear momentum
(c) torque (d) none
9. If vector $a=3\hat{i}$ what will be its component along y-axis is
(a) 3 (b) 9 (c) 0 (d) None
10. If $\vec{a} + \vec{b} = \vec{c}$ and $|\vec{a}| = |\vec{b}| = |\vec{c}|$, then angle between \vec{a} and \vec{b}
(a) $\theta = 30^\circ$ (b) $\theta = 60^\circ$ (c) $\theta = 120^\circ$
(d) None
11. If $\vec{a} + \vec{b} = \vec{a} - \vec{b}$ then
(a) $a=0$ (b) $b=0$ (c) (a) and (b) both zero
(d) None
12. If $\vec{A} \times \vec{B} = 0$, then
(a) \vec{a} and \vec{b} are zero vector
(b) angle between \vec{a} and \vec{b} is 90°
(c) angle between \vec{a} and \vec{b} is zero.
(d) None
13. Vector $\hat{i} + \hat{j} + \sqrt{2}\hat{k}$ will make , what angle with x-axis.
(a) 0° (b) 60° (c) 90° (d) 180°
14. If vector \vec{F} is directed towards east, then the direction of $\vec{F}/2$.
(a) east (b) north-east (c) south-east
(d) None
15. If $\vec{a} = \hat{i} + 2\hat{j}$ and $\vec{b} = 2\hat{i} + 2\hat{j}$
, then vector $\vec{a} + \vec{b}$ having magnitude equal to
(a) 4 (b) 5 (c) 7 (d) 10
16. If $\vec{a}, \vec{b} = \sqrt{3}$, then $|\vec{a} \times \vec{b}| = 3$ then angle between \vec{a} and \vec{b}
(a) 30° (b) 60° (c) 90° (d) None
17. If $\vec{a}, \vec{b} = |\vec{a} \times \vec{b}|$ then angle between \vec{a} and \vec{b}
(a) 0° (b) 45° (c) 90° (d) 180°
18. How many minimum coplaner vector of unequal in magnitude , required together resultant zero.
(a) 1 (b) 3 (c) 4 (d) 2
19. Two vector having magnitude 120 N and 20N , Can't produce any resultant
(a) 80N (b) 120N (c) 130N (d) 140N
20. $\hat{j} \times \hat{k}$?
(a) \hat{i} (b) $-\hat{i}$ (c) zero (d) None
21. If $\vec{a} = 2\hat{i} + 4\hat{j}$ and $\vec{b} = 4\hat{i} + 4\hat{j}$, $\vec{a} + \vec{b} = \vec{R}$ then magnitude of \vec{R} .
(a) 10 (b) 20 (c) 30 (d) 40
22. . If $\vec{a} = 2\hat{i} + 3\hat{j}$ and $\vec{b} = 6\hat{i} + \lambda\hat{j}$, \vec{a} and \vec{b} are mutually perpendicular to each other , then value of λ .
(a) 4 (b) -4 (c) 2 (d) -2
23. If $\vec{a} + \vec{b} = \vec{c}$ and $\vec{a} \times \vec{b} = \vec{d}$, then angle between \vec{c} & \vec{d} .
(a) 45° (b) 30° (c) 60° (d) 90°

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24. If $\vec{a} + \vec{b} = \vec{R}$, $|\vec{a}| > |\vec{b}|$ then 'a' is angle between

\vec{R} and \vec{a} and b is angle between \vec{R} and \vec{b} .

(a) $a > b$ (b) $a < b$ (c) $a = b$ (d) None

25. If $\vec{a} = 3\vec{i} + 4\vec{j}$ then find a, unit vector in the direction of vector \vec{a} .

(a) $3\vec{i} + 4/5\vec{j}$ (b) $3/5\vec{i} + 4\vec{j}$ (c) $3/5\vec{i} + 4/5\vec{j}$

(d) None

26. If the sum of magnitude of two vectors are 18, the magnitude of resultant of two vectors is 12, if resultant is perpendicular to one vector, then find magnitude of both vector.

(a) 3,9 (b) 6,12 (c) 5,13 (d) 8,10

27. If resultant of two unit vector is a unit vector, then find the resultant of difference of these two unit vector.

(a) $\sqrt{2}$ (b) $\sqrt{5}$ (c) $\sqrt{3}$ (d) $\frac{1}{\sqrt{2}}$

28. The vector $F = 2\vec{i} + 3\vec{j} + 4\vec{k}$ will make, what angle with x-axis

(a) $\cos^{-1} \frac{1}{\sqrt{29}}$ (b) $\cos^{-1} \frac{3}{\sqrt{29}}$ (c) $\cos^{-1} \frac{2}{\sqrt{29}}$

(d) None

29. If $\vec{A} = 2\vec{i} + 4\vec{j} + 4\vec{k}$ and $\vec{B} = 4\vec{i} + 2\vec{j} + 4\vec{k}$, then find angle between \vec{A} and \vec{B} .

(a) 60° (b) $\cos^{-1} \left(\frac{8}{9} \right)$ (c) 30° (d) 45°

30. If a vector $3\vec{i} + \vec{j} + 2\vec{k}$, then what will be its length in x-y plane

(a) $\sqrt{20}$ (b) $\sqrt{10}$ (c) $\sqrt{15}$ (d) $\sqrt{5}$