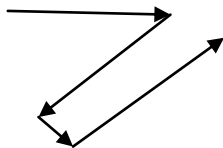


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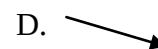
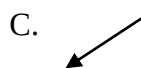
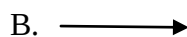
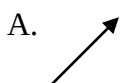
- Which of the following is a vector quantity? (UEE:2003)
A. Power. C. Temperature
B. Momentum. D. Electric current
- Suppose $\hat{A}=3\hat{i}-2\hat{j}+\hat{k}$, $\hat{B}=-\hat{i}-4\hat{j}+3\hat{k}$, and $\hat{C}$ is a vector lying along x-axis with the property that $\hat{A} \cdot (\hat{B} + \hat{C}) = 0$. Then vector $\hat{C}$ is given by: (UEE:2003)
A. $\frac{3}{\sqrt{10}}\hat{j}$. B. $-\frac{11}{3}\hat{i}$ C. $\frac{6}{\sqrt{10}}\hat{j}$. D. $-\frac{8}{3}\hat{i}$
- Suppose $\hat{A}=3\hat{i}-2\hat{j}$, $\hat{B}=-\hat{i}-4\hat{j}$, and $\hat{C}$ are three vectors in xy-plane with the property that $\hat{A} + \hat{B} - \hat{C} = 0$. Which of the following is a unit vector along $\hat{C}$? (UEE: 2003).
A. $2\hat{i}-6\hat{j}$. B. $-2\hat{i}+6\hat{j}$. C. $-\sqrt{\frac{1}{10}}\hat{i}+\frac{6}{\sqrt{10}}\hat{j}$ D. $\sqrt{\frac{1}{10}}\hat{i}-\frac{3}{\sqrt{10}}\hat{j}$
- Which pair of forces **CANNOT** give a resultant of 5N? (UEE:2003)
A. 1N and 4N. B. 1N and 6N. C. 3N and 4N. D. 1N and 7N.
- Suppose $\hat{A}=3\hat{i}-2\hat{j}$, and $\hat{B}=-\hat{i}-a\hat{j}$, are two vectors in xy-plane what is the value of a that $\hat{A} + \hat{B} = 2\hat{i}$? (UEE: 2004). A. 3. B. 2. C. -2. D. -3
- The sum and difference of two non-zero vectors $\hat{A}$ and $\hat{B}$ are equal in magnitude. What can you conclude about these two vectors? (UEE:2004)
A. $\hat{A}$ and $\hat{B}$ have the same direction. C. $\hat{A}$ and $\hat{B}$ have the same magnitude.
B. $\hat{A}$ and $\hat{B}$ have opposite direction. D. $\hat{A}$ and $\hat{B}$ are perpendicular to each other.
- A vector that represents the position of an object in relation to another object is called (UEE: 2005) A. Unit vector. B. position vector. C. Coplanar vector. D. Collinear vectors
- Two non-vector $\hat{A}$ and $\hat{B}$ are related by $\hat{A} = c\hat{B}$, where c is a scalar. If the two vectors have opposite directions, then one of the following is true about c ? (UEE:2005)
A. c is a positive number. C. $c=1$
B. c is a negative number. D. $c=0$
- If $\hat{A}=8\hat{i}+\hat{j}-2\hat{k}$ and $\hat{B}=5\hat{i}-3\hat{j}+\hat{k}$, then, what is the value of $\hat{A} \times \hat{B}$? (UEE:2005)
A. $3\hat{i}+4\hat{j}-3\hat{k}$. C. $\hat{A}=-5\hat{i}-18\hat{j}-29\hat{k}$
B. $-3\hat{i}-4\hat{j}+3\hat{k}$. D. $\hat{A}=5\hat{i}+18\hat{j}+29\hat{k}$

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10. Two non-zero vectors D and E have precisely equal magnitudes. Forth4 magnitude of $D+E$ to be 3 times larger than the magnitude of $D-E$, what must be the angle between D and E ? (UEE: 2006). A 30° . B. 37° . C. 53° . D. 60° .
11. The vector $2\hat{i}+\hat{j}+\hat{k}$ is perpendicular to $\hat{i}-4\hat{j}+\lambda\hat{k}$ if λ is equal to (UEE: 2006).
A. 0. B. -1. C. 2. D. 3.
12. What is the angle between vectors $\mathbf{A} = (a\hat{i}+a\sqrt{3}\hat{j})$ units and $\mathbf{B} = (a\sqrt{3}\hat{i}+a\hat{j})$ units? (UEE: 2007). A. 90° . B. 60° . C. 37° D. 30° .
13. The magnitude of two vectors $\mathbf{A}$ and $\mathbf{B}$ are 12 units, respectively. Which one of the following is **NOT** the possible value for the magnitude of the result vector $\mathbf{A}+\mathbf{B}$? (UEE: 2007).
A. 60 units. B. 17 units. C. 13 units. D. 7 units
14. What is the vector product $\hat{\mathbf{A}} \times \hat{\mathbf{B}}$ of two vectors $\hat{\mathbf{A}} = 7\hat{i} + 4\hat{j} - 2\hat{k}$ and $\hat{\mathbf{B}} = 3\hat{i} - 2\hat{j} + 5\hat{k}$? (UEE: 2007).
A. $36\hat{i} + 11\hat{j} - 2\hat{k}$. B. $4\hat{i} - 59\hat{j} - 26\hat{k}$. C. $-4\hat{i} + 59\hat{j} + 26\hat{k}$. D. $-36\hat{i} - 11\hat{j} + 2\hat{k}$
15. If vector $\hat{\mathbf{p}}$ is 6 m in the x- direction and vector $\hat{\mathbf{q}}$ is 8 m in the y-direction. Then what is the value of vector $\hat{\mathbf{p}} + \hat{\mathbf{q}}$? (UEE: 2009).
A. 10 m at 53° from x-direction. C. 10 m at 37° from x-direction.
B. $\sqrt{136}$ m at 45° from x-direction. D. $\sqrt{136}$ m at 30° from x-direction.
16. Given vectors $\hat{\mathbf{A}} = \sqrt{3}\hat{i} + \hat{j}$ and $\hat{\mathbf{B}} = \sqrt{3}\hat{i} - \hat{j}$. What is the smaller angle between the vectors? (UEE: 2009). A. 60° . B. 53° . C. 45° . D. 30°
17. If $\hat{\mathbf{A}} = \hat{x}$ m/s + 3 m/s $\hat{z}$, and $\hat{\mathbf{B}} = 2$ m/s $\hat{y}$ + 3 m/s $\hat{z}$, then what is the value of $|\hat{\mathbf{A}} \times \hat{\mathbf{B}}|$? (UEE: 2009).
A. $\sqrt{10}$ m/s. B. $\sqrt{13}$ m/s. C. 7 m/s. D. $\sqrt{130}$ m/s.
18. Two forces $\mathbf{F}_1 = (8\hat{i} + 3\hat{j})$ N and $\mathbf{F}_2 = (4\hat{i} + 6\hat{j})$ N are acting on an object. What is the magnitude and direction of the resultant force? (UEE: 2010)
A. 15N, 37° . B. 5N, -37° . C. 5N, 143° D. 225N, 143° .
19. The diagram below shows a path taken by a flying bird.



Which one of the following vector may represent a resultant displacement? (UEE: 2010)



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20. Four vectors are listed below. $\vec{A} = \begin{pmatrix} 4 \\ 10 \end{pmatrix}$ $\vec{B} = \begin{pmatrix} 2 \\ -5 \end{pmatrix}$ $\vec{C} = \begin{pmatrix} -6 \\ 15 \end{pmatrix}$ $\vec{D} = \begin{pmatrix} 15 \\ -6 \end{pmatrix}$

Which pair of the vectors is Orthogonal?

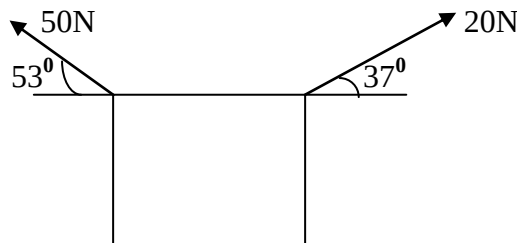
A. $\vec{A}$ and $\vec{B}$.

C. $\vec{C}$ and $\vec{D}$

B. $\vec{A}$ and $\vec{D}$

D. $\vec{B}$ and $\vec{C}$

21. Two forces exerted on a block as shown in the figure below. What is the horizontal component of the net force? (UEE:2011)



A. 70N, East.

B. 30N, West.

C. 14N, West

D. 28N, West

22. What is the magnitude of the resultant velocity for a bird flying first at a speed of 10 m/s North East and then flying to South at a speed of 8 m/s? (UEE:2011)

A. 7.13 m/s.

B. 16.6 m/s.

C. 12.8 m/s.

D. 7.07 m/s.

23. Let $\hat{C} = \hat{A} \times \hat{B}$ and $\Theta \neq 90^\circ$, where Θ is the smaller angle between $\hat{A}$ and $\hat{B}$ when they are drawn with their tails at the same point. Which of the following is **NOT** true? (UEE:2011)

A. $\hat{A} \cdot \hat{B} = 0$.

C. $|\hat{C}| = |\hat{A}| |\hat{B}| \sin \Theta$

B. $\hat{A} \cdot \hat{C} = 0$.

D. $-\hat{C} = \hat{B} \times \hat{A}$

THE END