1. *Which one of the following groups of unties represents a set of fundamental units of measurement?*

A. *(Mass, Power, Time)* **C.** *(Velocity, Force, Acceleration)*

B. *(Second, Meter, Kelvin)* **D.** *(Temperature, Mass, Time)*

2. *Which one of the following group of quantities represents a set of derived scalar quantities?*

A. *(Mass, Time, Energy)* **C.** *(Velocity, Force, Acceleration)*

B. *(Joule, Watt, Pascal)* **D.** *(Speed, Work, Power)*

3. *Which of the following pairs of types of vectors at the same time cannot hold true for two vectors?*

A. *Collinear and Concurrent* **C.** *Non-coplanar and Collinear*

B. *Non-coplanar and Concurrent* **D.** *Concurrent and Coplanar*

4. *Consider the following two statements.*

I. *If two vectors are coplanar, then they are also collinear.*

II. *If two vectors are collinear, then they are also coplanar.*

Which one of the following is always TRUE about the above two statements?

A. *Both statements are correct.* **C.** *Only statement 'I' is correct.*

B. *Neither statement is correct.* **D.** *Only statement 'II' is correct.*

5. *If* $\mathbf{M}$, $\mathbf{L}$ *and* $\mathbf{T}$ *stand for mass, length and time, respectively, then which one of the following will be the dimensions of force in SI units?*

A. MLT^{-1} **B.** ML^2T^{-2} **C.** ML^2T^{-1} **D.** MLT^{-2}

6. *Which one of the following statements is INCORRECT about a null vector?*

A. *A null vector can have any arbitrary direction.*

B. *Its origin and the terminal point are coincided.*

C. *Two non-identical vectors can give a null vector.*

D. *The magnitude of a null vector is unity(one).*

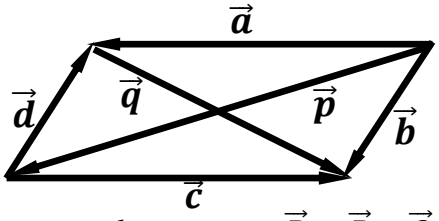
7. *As shown in fig-(1), the four-sided shape formed by vectors* $\vec{a}$, $\vec{b}$, $\vec{c}$ *and* $\vec{d}$ *is a parallelogram. Which one of the following is FALSE about the operations of the vectors?*

A. $\vec{p} = \vec{b} + \vec{a}$

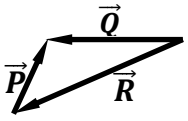
B. $\vec{c} = \vec{d} + \vec{q}$

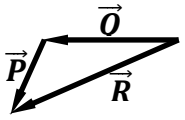
C. $\vec{b} = \vec{a} + \vec{q}$

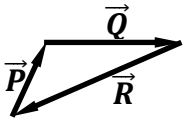
D. $\vec{q} = \vec{d} + \vec{c}$

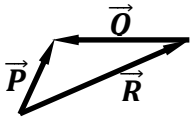


8. *Which one of the following graphical vector diagrams exactly represents the operation* $\vec{R} = \vec{P} + \vec{Q}$ *?*

A. 

B. 

C. 

D. 

9. *Which one of the following is the opposite of vector 25 m/s towards* 40^0 *Northwest?*

A. *25 m/s,* 50^0 *Southeast* **C.** *25 m/s,* 40^0 *Northeast*

B. *25 m/s,* 40^0 *Southeast* **D.** *25 m/s,* 50^0 *Southwest*

10. *Given two non-zero vectors* $\vec{P}$ *and* $\vec{Q}$, *such that* $|\vec{P}| > |\vec{Q}|$ *,then which one of the following is the possible range of the magnitude of their resultant vector* $\vec{R}$*?*

A. $|\vec{R}| \geq |\vec{P}| + |\vec{Q}|$ **C.** $|\vec{P}| - |\vec{Q}| \leq |\vec{R}| \leq |\vec{P}| + |\vec{Q}|$

B. $|\vec{R}| \leq |\vec{P}| - |\vec{Q}|$ **D.** $|\vec{P}| - |\vec{Q}| \geq |\vec{R}| \geq |\vec{P}| + |\vec{Q}|$

11. *Vector* $\vec{A}$ *is directed to the West and vector* $\vec{B}$ *is directed to the North. Which one of the following quadrants is the operation* $\vec{B} - \vec{A}$ *fall?*

A. *1st Quadrant* **B.** *2nd Quadrant* **C.** *3rd Quadrant* **D.** *4th Quadrant*

12. *The resultant of two non-zero vectors will be maximum if the vectors are:*

A. *Antiparallel* **B.** *Orthogonal* **C.** *opposite* **D.** *Parallel*

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13. *If* $\vec{c} = \vec{a} + \vec{b}$, *then* $|\vec{c}| = |\vec{a}| + |\vec{b}|$. *This mathematical statement is:*

A. *Always true* **B.** *Always false* **C.** *sometimes true* **D.** *cannot be determined*

14. *Given two vectors* $\vec{A}$ *and* $\vec{B}$, *such that* $|\vec{A}| = |\vec{B}| = \mathbf{10\ u}$, *then what are the maximum and minimum magnitudes of their sum, respectively?*

A. *10 u and 20 u* **B.** *0 u and 10 u* **C.** *10 u and 0 u* **D.** *0 u and 20 u*

15. *For which one of the following pairs of forces the Pythagoras theorem is used to find their resultant force?*

A. $F_1 = 3.0\ N, West$ *and* $F_2 = 5.0\ N, East$ **C.** $F_1 = 3.0\ N, North$ *and* $F_2 = 5.0\ N, South$

B. $F_1 = 3.0\ N, South$ *and* $F_2 = 5.0\ N, West$ **D.** $F_1 = 3.0\ N, East$ *and* $F_2 = 5.0\ N, East$

16. *Consider the following two statements.*

I. *If two non-zero vectors are equal vectors, then the vectors are also parallel vectors.*

II. *If two non-zero vectors are parallel vectors, then the vectors are also equal vectors.*

Which one of the following is always TRUE about the above two statements?

A. *Both statements are correct.* **C.** *Only statement* ***'I'*** *is correct.*

B. *Neither statement is correct.* **D.** *Only statement* ***'II'*** *is correct.*

17. *If* $|\vec{a} + \vec{b}|$ *are 28 units and 20 units, when the vectors are in the same direction and orthogonal to each other, respectively, then what will be* $|\vec{a} + \vec{b}|$ *if the vectors are in the opposite direction?*

A. *8 units* **B.** *12 units* **C.** *4 units* **D.** *48 units*

18. *If* $|\vec{a} + \vec{b}| = 20\ u$ *and* $|\vec{a} - \vec{b}| = 4\ u$, *then what are the possible values of each of the vectors?*

A. $16\ u$ *and* $4\ u$ **B.** $10\ u$ *and* $6\ u$ **C.** $24\ u$ *and* $16\ u$ **D.** $12\ u$ *and* $8\ u$

19. *In parallelogram law addition, if the angle between the vectors increases, then what will be the magnitude of their resultant?*

A. *Increases* **B.** *decreases* **C.** *unchanged* **D.** *Undecided*

20. *If vector* $\vec{A}$ *points northward and* $\vec{B}$ *points eastward, then what is the direction of* $\vec{B} - \vec{A}$?

A. *North of East.* **B.** *South of East* **C.** *South of West* **D.** *North of West*

21. *Which one of the following changes occurs when a negative sign is introduced on a non-zero vector?*

A. *Only the magnitude* **C.** *Both the magnitude and the direction*

B. *Only the direction* **D.** *Neither the magnitude nor the direction.*

22. *What is the minimum number of vectors of equal magnitudes required to produce a zero resultant?*

A. *Four* **B.** *Three* **C.** *Two* **D.** *One*

23. *What are the* x- *and* y-*components of* $\vec{A} = 5u, 37^o$ *West of North?* $(\sin 37^o = 0.6)$

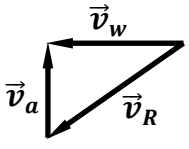
A. $A_x = -4u\ \&\ A_y = +3u$ **C.** $A_x = +4u\ \&\ A_y = -3u$

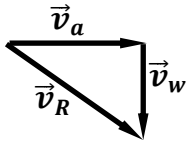
B. $A_x = -3u\ \&\ A_y = -4u$ **D.** $A_x = -3u\ \&\ A_y = +4u$

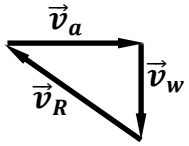
24. *If* $|\overrightarrow{P_x}| = -3u$ *and* $|\overrightarrow{P_y}| = +4u$, *then what is* $|\vec{P}|$?

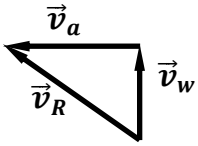
A. $+5u$ **B.** $-1u$ **C.** $+1u$ **D.** $+7u$

25. *An aircraft moving initially with a velocity of* $\vec{v}_a$ *due east enters a region where the wind is blowing with a velocity of* $\vec{v}_w$ *due south. Which vector diagram shows the resultant velocity* $\vec{v}_R$ *of the aircraft?*

A. 

B. 

C. 

D. 

26. *Which one of the following statements is TRUE?*

A. *If* $|\vec{M}| = |\vec{N}|$, *the it implies that vectors* $\vec{M} = \vec{N}$.

B. *If* $\vec{M}$ *and* $\vec{N}$ *are adjacent sides of a rhombus, then* $\vec{M} \cdot \vec{N} = 0$.

C. *If* $|\vec{M} + \vec{N}| = |\vec{M} - \vec{N}|$, *the vectors* $\vec{M}$ *and* $\vec{N}$ *are orthogonal.*

D. *If* $\vec{M}$ *and* $\vec{N}$ *are sides of a triangle, then* $|\vec{M} \times \vec{N}|$ *is area of the triangle.*

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27. *Two non-zero vectors are joined tail-to-tail and a third vector joined the heads of the two vectors. What physical quantity does the third vector represents?*

A. *The sum of the two vectors.* **C.** *The division of the two vectors.*
B. *The product of the two vectors.* **D.** *The difference of the two vectors.*

28. *The cross product of two vectors will have a maximum value when the vectors: -*

A. *are in the same direction.* **C.** *are perpendicular to each other.*
B. *are in the opposite direction.* **D.** *make an angle of* 45^0 *to each other.*

29. *Which one of the following is CORRECT about system of vectors in space?*

A. *The subtraction of two different vectors is commutative.*
B. *The product of two vectors can give a scalar result.*
C. *Two non-identical vectors can give a zero resultant vector.*
D. *The scalar product of two identical vectors is zero.*

30. *Which one of the following vectors is NOT a unit vector?*

A. $\hat{\imath}+\hat{\jmath}-\hat{k}$ **B.** $0.8\hat{\imath}-\sqrt{0.2}\hat{\jmath}+\frac{2}{5}\hat{k}$ **C.** $\frac{4\hat{\imath}-\hat{\jmath}-\hat{k}}{3\sqrt{2}}$ **D.** $\frac{\sqrt{3}}{4}\hat{\imath}-0.5\hat{\jmath}+\frac{3}{4}\hat{k}$

31. *For what positive values of* $\boldsymbol{m}$ *and* $\boldsymbol{n}$*, such that* $\boldsymbol{n=3m}$*, vector* $\hat{u}=\frac{m\hat{\imath}++\sqrt{6}\hat{\jmath}+n\hat{k}}{4}$ *will be a unit vector?*

A. $m=\pm2, n=\pm6$ **B.** $m=\pm3, n=\pm9$ **C.** $m=0, n=0$ **D.** $m=\pm1, n=$

32. *Which one of the following is CORRECT about vector* $\vec{A}=\hat{\imath}+\hat{\jmath}$ *?*

A. *The magnitude of the vector is unity.*
B. *The angle to which the vector makes with the x-axis is 90º.*
C. *A unit vector in the direction of the vector is* $\hat{u}_A=\frac{1}{\sqrt{2}}(\hat{\imath}+\hat{\jmath})$.
D. *The vector* $\hat{\imath}-\hat{\jmath}$ *is directed opposite to the given vector.*

33. *Given vector* $\vec{a}=10\hat{\imath}-m\hat{\jmath}$ *and* $|\vec{a}|=26$ *, then what is the value of* $\boldsymbol{m}$ *?*

A. *28* **B.** *24 N* **C.** *20* **D.** *16*

34. *Given;* $|\vec{P}|=\sqrt{3}$, $|\vec{Q}|=4$ *and* $\vec{P}.\vec{Q}=2\sqrt{3}$ *. The angle between the two vectors is: -*

A. $\frac{\pi}{6}$ **B.** $\pi/3$ **C.** $\pi/2$ **D.** $5\pi/2$

35. *If the angle between two vectors* $\hat{\imath}+\hat{k}$ *and* $\hat{\imath}-\hat{\jmath}+\lambda\hat{k}$ *is* $\frac{\pi}{3}$ *, then the value of* λ *is: -*

A. *0, 2* **B.** *0, 4* **C.** *-2, 0* **D.** *0, -4*

36. *Two vectors are given by* $\vec{A}=2\hat{\imath}+5\hat{\jmath}$ *and by* $\vec{B}=4\hat{\imath}+3\hat{\jmath}$*. What is the angle between vector* $\vec{A}+\vec{B}$ *and the positive x-axis?*

A. 30^0 **B.** 37^0 **C.** 53^0 **D.** 60^0

37. *The magnitude of a vector that must be added to vectors* $\vec{P}=10\hat{\imath}+7\hat{\jmath}$ *and* $\vec{Q}=-4\hat{\imath}+2\hat{\jmath}$ *to give 6* $\hat{\jmath}$ *is: -*

A. $3\sqrt{5}$ **B.** $5\sqrt{3}$ **C.** $6\sqrt{3}$ **D.** *7*

38. *If* $\vec{A}+\vec{B}=\hat{\imath}+\hat{\jmath}$ *and* $\vec{A}-\vec{B}=\hat{\imath}-\hat{\jmath}$*, then what is vector* $\vec{A}\cdot\vec{B}$*?*

A. *0* **B.** *1* **C.** *2* **D.** *-2*

39. *Which one of the following is FALSE about the characteristics of vector operation?*

A. *The scalar product of two non-zero vectors is commutative.*
B. *The dot product of two vectors is maximum if they are parallel.*
C. *The scalar product of a non-zero vector by itself is zero.*
D. *The dot product of two orthogonal non-zero vectors is zero.*

40. *Given two vectors* $\vec{A}=\hat{\imath}-\hat{k}$ *&* $\vec{B}=\hat{\imath}+\hat{\jmath}$*, then which one of the following is FALSE?*

A. $\vec{A}\cdot\vec{B}=1$ **C.** *The cosine of the angle b/n* $\vec{A}$ *and* $\vec{B}$ *is 0.5.*
B. $\vec{B}-\vec{A}=\hat{\jmath}+\hat{k}$ **D.** *The magnitude of* $\vec{A}+\vec{B}$ *is 6.*

41. *If vectors* $\vec{A}=-3\hat{\imath}+2\hat{\jmath}+m\hat{k}$ *and* $\vec{B}=m\hat{\imath}+5\hat{\jmath}-2\hat{k}$ *are orthogonal, then what is the value of m?*

A. *2* **B.** *0* **C.** *4* **D.** *1*

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42. *Which one of the following is TRUE about the characteristics of vector operation?*

A. *For non-zero vectors $\vec{a}$ and $\vec{b}$, $\vec{a}\cdot\vec{b}=0$ if $\vec{a}\parallel\vec{b}$*

B. *The scalar product of two identical vectors is zero.*

C. *If $|\vec{u}+v|=|u-\vec{v}|$, the vectors $\vec{u}$ and $\vec{v}$ are orthogonal.*

D. *For non-zero vector $\vec{A}$, $\vec{A}\cdot\vec{A}=1$.*

43. *If $\vec{A}+\vec{B}=\hat{\imath}+\hat{\jmath}$ and $\vec{A}-\vec{B}=\hat{\imath}+\hat{\jmath}$, then what is vector $\vec{B}$?*

A. *0* **B.** $\hat{\imath}$ **C.** $\hat{\imath}+\hat{\jmath}$ **D.** $-\hat{\jmath}$

44. *If the angle between vectors $\vec{P}=\mathbf{m}\hat{\imath}+2\hat{\jmath}$ and $\vec{Q}=\sqrt{3}\hat{\imath}-\hat{\jmath}$ is 60^0, then the possible value of **m** is:-*

A. $-2\sqrt{3}$ **B.** $+2\sqrt{3}$ **C.** $+3\sqrt{2}$ **D.** $-3\sqrt{2}$

45. *If $\hat{u}$, $\hat{v}$ and $\hat{w}$ are unit vectors such that $\hat{u}+\hat{v}=\hat{w}$, then the angle between $\hat{u}$ and $\hat{v}$ is:-*

A. 90^0 **B.** 180^0 **C.** 0^0 **D.** 120^0

46. *What is the scalar projection vector $\vec{A}=3\hat{\imath}+\hat{\jmath}+\hat{k}$ along vector $\vec{r}=2\hat{\imath}+2\hat{\jmath}+\hat{k}$?*

A. *2* **B.** *3* **C.** *4* **D.** *7*

47. *Given three vectors $\vec{A}=3\hat{\imath}+\hat{k}$, $\vec{B}=2\hat{\imath}-3\hat{\jmath}$ and $\vec{C}=\hat{\imath}+2\hat{\jmath}+2\hat{k}$, which one of the following is equal to $(\vec{A}+\vec{B})\cdot\vec{C}$?*

A. *-2* **B.** *1* **C.** *0* **D.** *10*

48. *For what value of m vectors $\vec{a}=3\hat{\imath}-m\hat{k}$ and $\vec{b}=m\hat{\imath}+5\hat{\jmath}$ are perpendicular with each other?*

A. *2* **B.** *0* **C.** *4* **D.** *1*

49. *Given two vectors $\vec{A}=4u$, Westward and $\vec{B}=3u$, Northward, then which one of the following is CORRECT about the algebra of the two vectors?*

A. $|\vec{A}-\vec{B}|=1u$ **B.** $|\vec{A}+\vec{B}|=7u$ **C.** $\vec{A}\cdot\vec{B}=0$ **D.** $|\vec{B}-\vec{A}|=-1u$

50. *Given two vectors $\vec{P}=\hat{\imath}+2\hat{\jmath}-3\hat{k}$, and $\vec{Q}=3\hat{\imath}-\hat{\jmath}+2\hat{k}$, then what is the angle between vectors $\vec{P}+\vec{Q}$ and $\vec{P}-\vec{Q}$?*

A. *0°* **B.** *30°* **C.** *60°* **D.** *90°*

51. *If $|\vec{P}|=8$, $|\vec{Q}|=4$ and $\vec{P}\cdot\vec{Q}=10$, the value of $|\vec{P}+\vec{Q}|$ is equal to: -*

A. *12* **B.** *1* **C.** *20* **D.** *10*

52. *If $\vec{A}=2\hat{\imath}+\hat{\jmath}-2\hat{k}$ and $\vec{B}=4\hat{\imath}-3\hat{\jmath}$, what is the vector projection of vector $\vec{A}$ onto $\vec{B}$?*

A. $\frac{1}{5}(-4\hat{\imath}+3\hat{\jmath})$ **B.** $\frac{1}{5}(4\hat{\imath}-3\hat{\jmath})$ **C.** $\frac{1}{5}(4\hat{\imath}+3\hat{\jmath})$ **D.** $\frac{1}{5}(-4\hat{\imath}-3\hat{\jmath})$

53. *If $\vec{a}=\hat{\imath}+\hat{\jmath}-2\hat{k}$, $\vec{b}=-\hat{\imath}+2\hat{\jmath}+\hat{k}$ and $\vec{c}=\hat{\imath}-2\hat{\jmath}+2\hat{k}$, then which one of the following is a unit vector parallel to $\vec{a}+\vec{b}+\vec{c}$?*

A. $\frac{\hat{\imath}+\hat{\jmath}+\hat{k}}{3}$ **B.** $\frac{\hat{\imath}-2\hat{\jmath}+\hat{k}}{\sqrt{6}}$ **C.** $\frac{2\hat{\imath}+\hat{\jmath}+\hat{k}}{\sqrt{6}}$ **D.** $\frac{\hat{\imath}+\hat{\jmath}+\hat{k}}{\sqrt{3}}$

54. *If $\vec{A}=\hat{\imath}+\hat{\jmath}-\hat{k}$, $\vec{B}=\hat{\imath}-\hat{\jmath}+\hat{k}$ and $\vec{C}=\hat{\imath}-\hat{\jmath}-\hat{k}$, then which one of the following is the result of $\vec{A}\cdot(\vec{B}+\vec{C})$?*

A. $\hat{\imath}-\hat{\jmath}+\hat{k}$ **B.** $2\hat{\imath}-2\hat{\jmath}$ **C.** $3\hat{\imath}-\hat{\jmath}+\hat{k}$ **D.** $2\hat{\imath}+2\hat{\jmath}-\hat{k}$

55. *Which one of the following vector operations obeys the commutative law?*

A. *Vector Product* **B.** *Dot product* **C.** *Subtraction* **D.** *Cross product*

56. *Which one of the following operations of unit vectors in clockwise system gives a null vector?*

A. $\hat{\imath}\times(\hat{\imath}\times\hat{k})$ **B.** $\hat{\imath}\cdot(\hat{\jmath}\times\hat{k})$ **C.** $\hat{\jmath}\times(\hat{k}\times\hat{\imath})$ **D.** $(\hat{\jmath}+\hat{k})\cdot(\hat{\jmath}-\hat{k})$

57. *Which one of the following is the result of the operation $\hat{\imath}\times(\hat{\jmath}+\hat{k})$?*

A. $\hat{\imath}+\hat{\jmath}$ **B.** $\hat{k}-\hat{\jmath}$ **C.** $\hat{k}+\hat{\imath}$ **D.** $\hat{\imath}-\hat{\jmath}$

58. *Which one of the following operations of unit vectors gives a result of one?*

A. $\hat{\imath}\cdot(\hat{k}\times\hat{\jmath})$ **B.** $\hat{\imath}\times(\hat{\jmath}\times\hat{k})$ **C.** $\hat{\imath}\cdot(\hat{\jmath}+\hat{\imath})$ **D.** $(\hat{\imath}\times\hat{k})\cdot(\hat{\imath}\times\hat{\jmath})$

59. *Which one of the following operations on unit vectors is INCORRECT?*

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A. $\hat{\imath}\cdot(\hat{\jmath}\times\hat{k})=1$ **C.** $\hat{\imath}\times(\hat{\jmath}+\hat{\imath})=-\hat{k}$

B. $\hat{\imath}\times(\hat{\jmath}\times\hat{k})=0$ **D.** $(\hat{\imath}\times\hat{k})\cdot(\hat{\imath}\times\hat{\jmath})=0$

60. *Which one of the following is a NOT rightful mathematical operation on system of vectors?*

A. $(\vec{P}+\vec{Q})\times\vec{R}$ **B.** $\vec{P}\times(\vec{Q}\cdot\vec{R})$ **C.** $\vec{P}\cdot(\vec{Q}\times\vec{R})$ **D.** $(\vec{P}\times\vec{Q})\times\vec{R}$

61. *Given* $\vec{P}\times\vec{Q}=\vec{R}$, *then which one of the following is* ***CORRECT*** *about the vectors?*

A. $\vec{P}\times\vec{R}=0$ **B.** $\vec{R}\times\vec{Q}=0$ **C.** $\vec{P}\cdot\vec{R}=0$ **D.** $\vec{Q}\parallel\vec{R}$

62. *Given three vectors;* $\vec{a}=2\hat{\imath}-\hat{\jmath}+\hat{k}$, $\vec{b}=\hat{\imath}+2\hat{\jmath}-3\hat{k}$ *and* $\vec{C}=3\hat{\imath}+m\hat{\jmath}+5\hat{k}$, *what must be the value "m" such that the three vectors to be coplanar?*

A. *-4* **B.** *1* **C.** *4* **D.** *-2*

63. *Given three vectors* $\vec{A}=\hat{\jmath}$, $\vec{B}=\hat{\imath}+\hat{\jmath}$ *and* $\vec{C}=-\hat{\imath}$, *then* $(\vec{A}\times\vec{C})\cdot\vec{B}$ *is equal to:-*

A. *-1* **B.** $\hat{k}$ **C.** *0* **D.** *1*

64. *Given* $\vec{A}=2\hat{\imath}+\hat{\jmath}$ *and* $\vec{B}=-\hat{\imath}+2\hat{\jmath}-2\hat{k}$, *a unit vector perpendicular to both vectors is:-*

A. $\frac{1}{3\sqrt{5}}(-2\hat{\imath}+4\hat{\jmath}+5\hat{k})$ **C.** $\frac{1}{3\sqrt{5}}(-2\hat{\imath}-4\hat{\jmath}-5\hat{k})$

B. $\frac{1}{5\sqrt{3}}(-2\hat{\imath}+4\hat{\jmath}+5\hat{k})$ **D.** $\frac{1}{5\sqrt{3}}(-2\hat{\imath}-4\hat{\jmath}-5\hat{k})$

65. *If two of the three sides of a triangle are formed by vectors* $\vec{A}=(4\hat{\imath}-3\hat{\jmath})\ cm$, *and* $\vec{B}=(2\hat{\imath}+\hat{\jmath})\ cm$, *then what is the area of a parallelogram?*

A. *20* cm^2 **B.** *30* cm^2 **C.** *5* cm^2 **D.** *10* cm^2

66. *For non-zero vectors* $\vec{A}$ & $\vec{B}$, *which one of the following vector operations is TRUE?*

A. $\vec{A}\cdot\vec{A}=1$ **C.** $\vec{A}\times\vec{A}=0$

B. $\vec{A}\times\vec{B}=0\ if\ \vec{A}\perp\vec{B}$ **D.** $\vec{A}\cdot\vec{B}=0\ if\ \vec{A}\parallel\vec{B}$

67. *Consider three vectors* $\vec{P}=\hat{\imath}+\hat{\jmath}$, $\vec{Q}=\hat{\imath}-\hat{\jmath}$, *and* $\vec{R}=\hat{\imath}+2\hat{\jmath}+3\hat{k}$. *If* $\hat{n}$ *is a unit vector such that* $\vec{P}\cdot\hat{n}=\vec{Q}\cdot\hat{n}=0$, *then* $\vec{R}\cdot\hat{n}$ *is equal to: -*

A. *0* **B.** *1* **C.** *2* **D.** *3*

68. *If* $|\vec{a}|=5$, $|\vec{b}|=2$ *and* $|\vec{a}\times\vec{b}|=6$, *What is* $\vec{a}.\vec{b}$?

A. *8* **B.** *14* **C.** *4* **D.** *10*

69. *Given two non-zero vectors* $\vec{a}$ *and* $\vec{b}$, *the value of* $(|\vec{a}\cdot\vec{b}|)^2+(|\vec{a}\times\vec{b}|)^2$ *equals:*

A. 1 B. *ab* C. a^2b^2 D. $2a^2b$

70. *A first quadrant vector* $\vec{A}$ *makes an angle of* 40^0 *with the positive axis. What is the angle to which vector* $-\vec{A}$ *with the same positive x-axis?*

A. 40^0 **B.** 140^0 **C.** 50^0 **D.** 130^0

ANSWERS

1. B	**2. D**	**3. C**	**4. D**	**5. D**	**6. D**	**7. D**
8. B	**9. B**	**10. C**	**11. B**	**12. D**	**13. C**	**14. D**
15. B	**16. C**	**17. C**	**18. D**	**19. B**	**20. B**	**21. A**
22. C	**23. A**	**24. A**	**25. B**	**26. C**	**27. D**	**28. C**
29. B	**30. A**	**31. D**	**32. C**	**33. B**	**34. B**	**35. D**
36. B	**37. A**	**38. A**	**39. C**	**40. D**	**41. A**	**42. C**
43. A	**44. B**	**45. D**	**46. B**	**47. A**	**48. B**	**49. C**
50. D	**51. D**	**52. D**	**53. D**	**54. B**	**55. B**	**56. C**
57. B	**58. C**	**59. C**	**60. B**	**61. C**	**62. A**	**63. C**
64. A	**65. D**	**66. C**	**67. D**	**68. A**	**69. C**	**70. B**

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