Fundamentals of Vectors

1. The vector projection of a vector $3\hat{i}+4\hat{k}$ on y-axis is

(a) 5 (b) 4

(c) 3 (d) Zero

2. Position of a particle in a rectangular-co-ordinate system is (3, 2, 5). Then its position vector will be

(a) $3\hat{i}+5\hat{j}+2\hat{k}$ (b) $3\hat{i}+2\hat{j}+5\hat{k}$

(c) $5\hat{i}+3\hat{j}+2\hat{k}$ (d) None of these

3. If a particle moves from point P (2,3,5) to point Q (3,4,5). Its displacement vector be

(a) $\hat{i}+\hat{j}+10\hat{k}$ (b) $\hat{i}+\hat{j}+5\hat{k}$

(c) $\hat{i}+\hat{j}$ (d) $2\hat{i}+4\hat{j}+6\hat{k}$

4. A force of 5 N acts on a particle along a direction making an angle of 60° with vertical. Its vertical component be

(a) 10 N (b) 3 N

(c) 4 N (d) 2.5 N

5. If $A=3\hat{i}+4\hat{j}$ and $B=7\hat{i}+24\hat{j}$, the vector having the same magnitude as B and parallel to A is

(a) $5\hat{i}+20\hat{j}$ (b) $15\hat{i}+10\hat{j}$

(c) $20\hat{i}+15\hat{j}$ (d) $15\hat{i}+20\hat{j}$

6. Vector $\vec{A}$ makes equal angles with x, y and z axis. Value of its components (in terms of magnitude of $\vec{A}$) will be

(a) $\frac{A}{\sqrt{3}}$ (b) $\frac{A}{\sqrt{2}}$

(c) $\sqrt{3}\,A$ (d) $\frac{\sqrt{3}}{A}$

7. If $\vec{A}=2\hat{i}+4\hat{j}-5\hat{k}$ the direction of cosines of the vector $\vec{A}$ are

(a) $\frac{2}{\sqrt{45}},\frac{4}{\sqrt{45}}$ and $\frac{-5}{\sqrt{45}}$ (b) $\frac{1}{\sqrt{45}},\frac{2}{\sqrt{45}}$ and $\frac{3}{\sqrt{45}}$

(c) $\frac{4}{\sqrt{45}},0$ and $\frac{4}{\sqrt{45}}$ (d) $\frac{3}{\sqrt{45}},\frac{2}{\sqrt{45}}$ and $\frac{5}{\sqrt{45}}$

8. The vector that must be added to the vector $\hat{i}-3\hat{j}+2\hat{k}$ and $3\hat{i}+6\hat{j}-7\hat{k}$ so that the resultant vector is a unit vector along the y-axis is

(a) $4\hat{i}+2\hat{j}+5\hat{k}$ (b) $-4\hat{i}-2\hat{j}+5\hat{k}$

(c) $3\hat{i}+4\hat{j}+5\hat{k}$ (d) Null vector

9. How many minimum number of coplanar vectors having different magnitudes can be added to give zero resultant

(a) 2 (b) 3

(c) 4 (d) 5

10. A hall has the dimensions $10\,m\times12\,m\times14\,m$. A fly starting at one corner ends up at a diametrically opposite corner. What is the magnitude of its displacement

(a) 17 m (b) 26 m

(c) 36 m (d) 20 m

11. 100 coplanar forces each equal to 10 N act on a body. Each force makes angle $\pi/50$ with the preceding force. What is the resultant of the forces

(a) 1000 N (b) 500 N

(c) 250 N (d) Zero

12. The magnitude of a given vector with end points (4, – 4, 0) and (– 2, – 2, 0) must be

(a) 6 (b) $5\sqrt{2}$

(c) 4 (d) $2\sqrt{10}$

13. The expression $\left(\frac{1}{\sqrt{2}}\hat{i}+\frac{1}{\sqrt{2}}\hat{j}\right)$ is a

(a) Unit vector (b) Null vector

(c) Vector of magnitude $\sqrt{2}$ (d)

14. Given vector $\vec{A}=2\hat{i}+3\hat{j}$, the angle between $\vec{A}$ and y-axis is

(a) $\tan^{-1}3/2$ (b) $\tan^{-1}2/3$

(c) $\sin^{-1}2/3$ (d) $\cos^{-1}2/3$

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

(a) $\hat{k}$ (b) $\hat{i}+\hat{j}$

(c) $\frac{\hat{i}+\hat{j}}{\sqrt{2}}$ (d) $\frac{\hat{i}+\hat{j}}{2}$

16. A vector is represented by $3\hat{i}+\hat{j}+2\hat{k}$. Its length in XY plane is

(a) 2 (b) $\sqrt{14}$

(c) $\sqrt{10}$ (d) $\sqrt{5}$

17. Five equal forces of 10 N each are applied at one point and all are lying in one plane. If the angles between them are equal, the resultant force will be

(a) Zero (b) 10 N

(c) 20 N (d) $10\sqrt{2}N$

18. The angle made by the vector $A = \hat{i} + \hat{j}$ with *x*- axis is

(a) 90° (b) 45°

(c) 22.5° (d) 30°

19. Any vector in an arbitrary direction can always be replaced by two (or three)

(a) Parallel vectors which have the original vector as their resultant

(b) Mutually perpendicular vectors which have the original vector as their resultant

(c) Arbitrary vectors which have the original vector as their resultant

(d) It is not possible to resolve a vector

20. Angular momentum is

(a) A scalar (b) A polar vector

(c) An axial vector (d) None of these

21. Which of the following is a vector

(a) Pressure (b) Surface tension

(c) Moment of inertia (d) None of these

22. If $\vec{P} = \vec{Q}$ then which of the following is NOT correct

(a) $\hat{P} = \hat{Q}$ (b) $|\vec{P}| = |\vec{Q}|$

(c) $P\hat{Q} = Q\hat{P}$ (d) $\vec{P} + \vec{Q} = \hat{P} + \hat{Q}$

23. The position vector of a particle is $\vec{r} = (a\cos\omega t)\hat{i} + (a\sin\omega t)\hat{j}$. The velocity of the particle is

(a) Parallel to the position vector

(b) Perpendicular to the position vector

(c) Directed towards the origin

(d) Directed away from the origin

24. Which of the following is a scalar quantity

25. (a) Displacement (b) Electric field

(c) Acceleration (d) Work

26. 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) $\sqrt{0.39}$

27. A boy walks uniformally along the sides of a rectangular park of size 400 *m*× 300 *m*, starting from one corner to the other corner diagonally opposite. Which of the following statement is incorrect

(a) He has travelled a distance of 700 *m*

(b) His displacement is 700 *m*

(c) His displacement is 500 *m*

(d) His velocity is not uniform throughout the walk

28. The unit vector parallel to the resultant of the vectors $\vec{A} = 4\hat{i} + 3\hat{j} + 6\hat{k}$ and $\vec{B} = -\hat{i} + 3\hat{j} - 8\hat{k}$ is

(a) $\frac{1}{7}(3\hat{i} + 6\hat{j} - 2\hat{k})$ (b) $\frac{1}{7}(3\hat{i} + 6\hat{j} + 2\hat{k})$

(c) $\frac{1}{49}(3\hat{i} + 6\hat{j} - 2\hat{k})$ (d) $\frac{1}{49}(3\hat{i} - 6\hat{j} + 2\hat{k})$

29. Surface area is

(a) Scalar (b) Vector

(c) Neither scalar nor vector(d)Both scalar and vector

30. With respect to a rectangular cartesian coordinate system, three vectors are expressed as

$\vec{a} = 4\hat{i} - \hat{j}$, $\vec{b} = -3\hat{i} + 2\hat{j}$ and $\vec{c} = -\hat{k}$

where $\hat{i}, \hat{j}, \hat{k}$ are unit vectors, along the *X*, *Y* and *Z*-axis respectively. The unit vectors $\hat{r}$ along the direction of sum of these vector is

(a) $\hat{r} = \frac{1}{\sqrt{3}}(\hat{i} + \hat{j} - \hat{k})$ (b) $\hat{r} = \frac{1}{\sqrt{2}}(\hat{i} + \hat{j} - \hat{k})$

(c) $\hat{r} = \frac{1}{3}(\hat{i} - \hat{j} + \hat{k})$ (d) $\hat{r} = \frac{1}{\sqrt{2}}(\hat{i} + \hat{j} + \hat{k})$

31. The angle between the two vectors $\vec{A} = 3\hat{i} + 4\hat{j} + 5\hat{k}$ and $\vec{B} = 3\hat{i} + 4\hat{j} + 5\hat{k}$ is

(a) 60° (b) Zero

(c) 90° (d) None of these

32. The position vector of a particle is determined by the expression $\vec{r} = 3t^2\hat{i} + 4t^2\hat{j} + 7\hat{k}$

The distance traversed in first 10 *sec* is

(a) 500 *m* (b) 300 *m*

(c) 150 *m* (d) 100 *m*

33. Unit vector parallel to the resultant of vectors $\vec{A} = 4\hat{i} - 3\hat{j}$ and $\vec{B} = 8\hat{i} + 8\hat{j}$ will be

(a) $\frac{24\hat{i} + 5\hat{j}}{13}$ (b) $\frac{12\hat{i} + 5\hat{j}}{13}$

(c) $\frac{6\hat{i} + 5\hat{j}}{13}$ (d) None of these

34. The component of vector $A = 2\hat{i} + 3\hat{j}$ along the vector $\hat{i} + \hat{j}$ is

(a) $\frac{5}{\sqrt{2}}$ (b) $10\sqrt{2}$

(c) $5\sqrt{2}$ (d) 5

35. The angle between the two vectors $\vec{A} = 3\hat{i} + 4\hat{j} + 5\hat{k}$ and $\vec{B} = 3\hat{i} + 4\hat{j} - 5\hat{k}$ will be

(a) 90° (b) 0°

(c) 60° (d) 45°

Addition and Subtraction of Vectors

1. There are two force vectors, one of 5 *N* and other of 12 *N* at what angle the two vectors be added to get resultant vector of 17 *N*, 7 *N* and 13 *N* respectively

(a) 0°, 180° and 90° (b) 0°, 90° and 180°

(c) 0°, 90° and 90° (d) 180°, 0° and 90°

2. If $\vec{A} = 4\hat{i} - 3\hat{j}$ and $\vec{B} = 6\hat{i} + 8\hat{j}$ then magnitude and direction of $\vec{A} + \vec{B}$ will be

(a) $5, \tan^{-1}(3/4)$ (b) $5\sqrt{5}, \tan^{-1}(1/2)$

(c) $10, \tan^{-1}(5)$ (d) $25, \tan^{-1}(3/4)$

3. A truck travelling due north at 20 *m/s* turns west and travels at the same speed. The change in its velocity be

(a) 40 *m/s N–W* (b) $20\sqrt{2}$ *m/s N–W*

(c) 40 *m/s S–W* (d) $20\sqrt{2}$ *m/s S–W*

4. If the sum of two unit vectors is a unit vector, then magnitude of difference is

(a) $\sqrt{2}$ (b) $\sqrt{3}$

(c) $1/\sqrt{2}$ (d) $\sqrt{5}$

5. $\vec{A} = 2\hat{i} + \hat{j}, B = 3\hat{j} - \hat{k}$ and $\vec{C} = 6\hat{i} - 2\hat{k}$.

Value of $\vec{A} - 2\vec{B} + 3\vec{C}$ would be

(a) $20\hat{i} + 5\hat{j} + 4\hat{k}$ (b) $20\hat{i} - 5\hat{j} - 4\hat{k}$

(c) $4\hat{i} + 5\hat{j} + 20\hat{k}$ (d) $5\hat{i} + 4\hat{j} + 10\hat{k}$

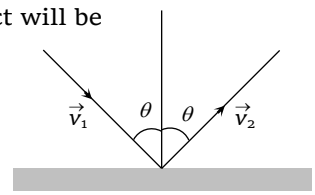
6. An object of *m kg* with speed of *v m/s* strikes a wall at an angle θ and rebounds at the same speed and same angle. The magnitude of the change in momentum of the object will be

(a) $2mv\cos\theta$

(b) $2mv\sin\theta$

(c) 0

(d) $2mv$



7. Two forces, each of magnitude *F* have a resultant of the same magnitude *F*. The angle between the two forces is

(a) 45° (b) 120°

(c) 150° (d) 60°

8. For the resultant of the two vectors to be maximum, what must be the angle between them

(a) 0° (b) 60°

(c) 90° (d) 180°

9. A particle is simultaneously acted by two forces equal to 4 *N* and 3 *N*. The net force on the particle is

(a) 7 *N* (b) 5 *N*

(c) 1 *N* (d) Between 1 *N* and 7 *N*

10. Two vectors $\vec{A}$ and $\vec{B}$ lie in a plane, another vector $\vec{C}$ lies outside this plane, then the resultant of these three vectors *i.e.,* $\vec{A} + \vec{B} + \vec{C}$

(a) Can be zero

(b) Cannot be zero

(c) Lies in the plane containing $\vec{A} + \vec{B}$

(d) Lies in the plane containing $\vec{C}$

11. If the resultant of the two forces has a magnitude smaller than the magnitude of larger force, the two forces must be

(a) Different both in magnitude and direction

(b) Mutually perpendicular to one another

(c) Possess extremely small magnitude

(d) Point in opposite directions

12. Forces F_1 and F_2 act on a point mass in two mutually perpendicular directions. The resultant force on the point mass will be

(a) $F_1 + F_2$ (b) $F_1 - F_2$

(c) $\sqrt{F_1^2 + F_2^2}$ (d) $F_1^2 + F_2^2$

13. If $|\vec{A} - \vec{B}| = |\vec{A}| = |\vec{B}|$, the angle between $\vec{A}$ and $\vec{B}$ is

(a) 60° (b) 0°

(c) 120° (d) 90°

14. Let the angle between two nonzero vectors $\vec{A}$ and $\vec{B}$ be 120° and resultant be $\vec{C}$

(a) $\vec{C}$ must be equal to $|\vec{A} - \vec{B}|$

(b) $\vec{C}$ must be less than $|\vec{A} - \vec{B}|$

(c) $\vec{C}$ must be greater than $|\vec{A} - \vec{B}|$

(d) $\vec{C}$ may be equal to $|\vec{A} - \vec{B}|$

15. The magnitude of vector $\vec{A}, \vec{B}$ and $\vec{C}$ are respectively 12, 5 and 13 units and $\vec{A}+\vec{B}=\vec{C}$ then the angle between $\vec{A}$ and $\vec{B}$ is

(a) 0 (b) π

(c) $\pi/2$ (d) $\pi/4$

16. Magnitude of vector which comes on addition of two vectors, $6\hat{i}+7\hat{j}$ and $3\hat{i}+4\hat{j}$ is

(a) $\sqrt{136}$ (b) $\sqrt{13.2}$

(c) $\sqrt{202}$ (d) $\sqrt{160}$

17. A particle has displacement of 12 *m* towards east and 5 *m* towards north then 6 *m* vertically upward. The sum of these displacements is

(a) 12 (b) 10.04 *m*

(c) 14.31 *m* (d) None of these

18. The three vectors $\vec{A}=3\hat{i}-2\hat{j}+\hat{k},\ \vec{B}=\hat{i}-3\hat{j}+5\hat{k}$ and $\vec{C}=2\hat{i}+\hat{j}-4\hat{k}$ form

(a) An equilateral triangle (b) Isosceles triangle

(c) A right angled triangle (d) No triangle

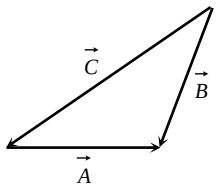
19. For the figure

(a) $\vec{A}+\vec{B}=\vec{C}$

(b) $\vec{B}+\vec{C}=\vec{A}$

(c) $\vec{C}+\vec{A}=\vec{B}$

(d) $\vec{A}+\vec{B}+\vec{C}=0$



20. Let $\vec{C}=\vec{A}+\vec{B}$ then

(a) $|\vec{C}|$ is always greater then $|\vec{A}|$

(b) It is possible to have $|\vec{C}|<|\vec{A}|$ and $|\vec{C}|<|\vec{B}|$

(c) *C* is always equal to *A* + *B*

(d) *C* is never equal to *A* + *B*

21. The value of the sum of two vectors $\vec{A}$ and $\vec{B}$ with θ as the angle between them is

(a) $\sqrt{A^2+B^2+2AB\cos\theta}$ (b) $\sqrt{A^2-B^2+2AB\cos\theta}$

(c) $\sqrt{A^2+B^2-2AB\sin\theta}$ (d) $\sqrt{A^2+B^2+2AB\sin\theta}$

22. Following sets of three forces act on a body. Whose resultant cannot be zero

(a) 10, 10, 10 (b) 10, 10, 20

(c) 10, 20, 23 (d) 10, 20, 40

23. When three forces of 50 *N*, 30 *N* and 15 *N* act on a body, then the body is

(a) At rest

(b) Moving with a uniform velocity

(c) In equilibrium

(d) Moving with an acceleration

24. The sum of two forces acting at a point is 16 *N*. If the resultant force is 8 *N* and its direction is perpendicular to minimum force then the forces are

(a) 6 *N* and 10 *N* (b) 8 *N* and 8 *N*

(c) 4 *N* and 12 *N* (d) 2 *N* and 14 *N*

[CPMT 1997]

25. If vectors *P, Q* and *R* have magnitude 5, 12 and 13 units and $\vec{P}+\vec{Q}=\vec{R},$ the angle between *Q* and *R* is **[CEET 19**

[BHU 2000]

(a) $\cos^{-1}\frac{5}{12}$ (b) $\cos^{-1}\frac{5}{13}$

(c) $\cos^{-1}\frac{12}{13}$ (d) $\cos^{-1}\frac{7}{13}$

26. The resultant of two vectors *A* and *B* is perpendicular to the vector *A* and its magnitude is equal to half the magnitude of vector *B*. The angle between *A* and *B* is

[AIIMS 1998]

(a) 120° (b) 150°

(c) 135° (d) None of these

27. What vector must be added to the two vectors $\hat{i}-2\hat{j}+2\hat{k}$ and $2\hat{i}+\hat{j}-\hat{k},$ so that the resultant may be a unit vector along *x*-axis

(a) $2\hat{i}+\hat{j}-\hat{k}$ (b) $-2\hat{i}+\hat{j}-\hat{k}$

(c) $2\hat{i}-\hat{j}+\hat{k}$ (d) $-2\hat{i}-\hat{j}+\hat{k}$

28. What is the angle between $\vec{P}$ and the resultant of $(\vec{P}+\vec{Q})$ and $(\vec{P}-\vec{Q})$

(a) Zero (b) $\tan^{-1}(P/Q)$

(c) $\tan^{-1}(Q/P)$ (d) $\tan^{-1}(P-Q)/(P+Q)$

29. The resultant of $\vec{P}$ and $\vec{Q}$ is perpendicular to $\vec{P}$. What is the angle between $\vec{P}$ and $\vec{Q}$

(a) $\cos^{-1}(P/Q)$ (b) $\cos^{-1}(-P/Q)$

(c) $\sin^{-1}(P/Q)$ (d) $\sin^{-1}(-P/Q)$

30. Maximum and minimum magnitudes of the resultant of two vectors of magnitudes *P* and *Q* are in the ratio $3:1.$ Which of the following relations is true

[SCRA 1996]

(a) $P=2Q$ (b) $P=Q$

(c) $PQ=1$ (d) None of these

31. The resultant of two vectors $\vec{P}$ and $\vec{Q}$ is $\vec{R}$. If *Q* is doubled, the new resultant is perpendicular to *P*. Then *R* equals

[CPMT 1985]

(a) *P* (b) (*P*+*Q*)

(c) *Q* (d) (*P*–*Q*)

32. Two forces, F_1 and F_2 are acting on a body. One force is double that of the other force and the resultant is equal to the greater force. Then the angle between the two forces is

(a) $\cos^{-1}(1/2)$ (b) $\cos^{-1}(-1/2)$

(c) $\cos^{-1}(-1/4)$ (d) $\cos^{-1}(1/4)$

33. Given that $\vec{A}+\vec{B}=\vec{C}$ and that $\vec{C}$ is $\perp$ to $\vec{A}$. Further if $|\vec{A}|=|\vec{C}|$, then what is the angle between $\vec{A}$ and $\vec{B}$

(a) $\frac{\pi}{4}$ *radian* (b) $\frac{\pi}{2}$ *radian*

(c) $\frac{3\pi}{4}$ *radian* (d) π *radian*

34. A body is at rest under the action of three forces, two of which are $\vec{F}_1=4\hat{i},\vec{F}_2=6\hat{j}$, the third force is

(a) $4\hat{i}+6\hat{j}$ (b) $4\hat{i}-6\hat{j}$

(c) $-4\hat{i}+6\hat{j}$ (d) $-4\hat{i}-6\hat{j}$

35. A plane is revolving around the earth with a speed of 100 *km/hr* at a constant height from the surface of earth. The change in the velocity as it travels half circle is

(a) 200 *km/hr* (b) 150 *km/hr*

(c) $100\sqrt{2}\,km/hr$ (d) 0

36. What displacement must be added to the displacement $25\hat{i}-6\hat{j}\ m$ to give a displacement of 7.0 *m* pointing in the *x*- direction

(a) $18\hat{i}-6\hat{j}$ (b) $32\hat{i}-13\hat{j}$

(c) $-18\hat{i}+6\hat{j}$ (d) $-25\hat{i}+13\hat{j}$

37. A body moves due East with velocity 20 *km/hour* and then due North with velocity 15 *km/hour*. The resultant velocity

(a) 5 *km/hour* (b) 15 *km/hour*

(c) 20 *km/hour* (d) 25 *km/hour*

38. The magnitudes of vectors $\vec{A},\vec{B}$ and $\vec{C}$ are 3, 4 and 5 units respectively. If $\vec{A}+\vec{B}=\vec{C}$, the angle between $\vec{A}$ and $\vec{B}$ is

(a) $\frac{\pi}{2}$ (b) $\cos^{-1}(0.6)$

(c) $\tan^{-1}\left(\frac{7}{5}\right)$ (d) $\frac{\pi}{4}$

39. While travelling from one station to another, a car travels 75 *km* North, 60 *km* North-east and 20 *km* East. The minimum distance between the two stations is

(a) 72 *km* (b) 112 *km*

(c) 132 *km* (d) 155 *km*

40. A scooter going due east at 10 ms^{-1} turns right through an angle of 90°. If the speed of the scooter remains unchanged in taking turn, the change is the velocity of the scooter is

(a) 20.0 ms^{-1} south eastern direction

(b) Zero

(c) 10.0 ms^{-1} in southern direction

(d) 14.14 ms^{-1} in south-west direction

41. A person goes 10 *km* north and 20 *km* east. What will be displacement from initial point

(a) 22.36 *km* (b) 2 *km*

(c) 5 *km* (d) 20 *km*

42. Two forces $\vec{F}_1=5\hat{i}+10\hat{j}-20\hat{k}$ and $\vec{F}_2=10\hat{i}-5\hat{j}-15\hat{k}$ act on a single point. The angle between $\vec{F}_1$ and $\vec{F}_2$ is nearly

(a) 30° (b) 45°

(c) 60° (d) 90°

43. Which pair of the following 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*

44. Two forces 3*N* and 2 *N* are at an angle θ such that the resultant is *R*. The first force is now increased to 6*N* and the resultant become 2*R*. The value of θ is

(a) 30° (b) 60°

(c) 90° (d) 120°

45. Three concurrent forces of the same magnitude are in equilibrium. What is the angle between the forces ? Also name the triangle formed by the forces as sides

(a) 60° equilateral triangle

(b) 120° equilateral triangle

(c) 120°, 30°, 30° an isosceles triangle

(d) 120° an obtuse angled triangle

46. If $|\vec{A}+\vec{B}|=|\vec{A}|+|\vec{B}|$, then angle between $\vec{A}$ and $\vec{B}$ will be

(a) 90° (b) 120°

(c) 0° (d) 60°

47. The maximum and minimum magnitude of the resultant of two given vectors are 17 *units* and 7 *unit* respectively. If these two vectors are at right angles to each other, the magnitude of their resultant is

(a) 14 (b) 16

(c) 18 (d) 13

48. The vector sum of two forces is perpendicular to their vector differences. In that case, the forces **[CBSE PMT 2003]**

(a) Are equal to each other in magnitude

(b) Are not equal to each other in magnitude

(c) Cannot be predicted

(d) Are equal to each other

49. y component of velocity is 20 and x component of velocity is 10. The direction of motion of the body with the horizontal at this instant is **[Manipal 2003]**

(a) $\tan^{-1}(2)$ (b) $\tan^{-1}(1/2)$

(c) 45° (d) 0°

50. Two forces of 12 N and 8 N act upon a body. The resultant force on the body has maximum value of

(a) 4 N (b) 0 N

(c) 20 N (d) 8 N

51. Two equal forces (P each) act at a point inclined to each other at an angle of 120°. The magnitude of their resultant is

(a) $P/2$ (b) $P/4$

(c) P (d) $2P$

52. The vectors $5i+8j$ and $2i+7j$ are added. The magnitude of the sum of these vector is **[BHU 2000]**

(a) $\sqrt{274}$ (b) 38

(c) 238 (d) 560

53. Two vectors $\vec{A}$ and $\vec{B}$ are such that $\vec{A}+\vec{B}=\vec{A}-\vec{B}$. Then

(a) $\vec{A}.\vec{B}=0$ (b) $\vec{A}\times\vec{B}=0$

(c) $\vec{A}=0$ (d) $\vec{B}=0$