



10. If the position vectors of the vertices of a triangle be \vec{a} and \vec{b} and \vec{c} then the triangle is
- (a) Right angled (b) Isosceles
(c) Equilateral (d) None of these
11. The perimeter of the triangle whose vertices have the position vectors \vec{a} and \vec{b} is given by $|\vec{a} + \vec{b}|$ [MP PET 1993]
- (a) $2|\vec{a}|$ (b) $2|\vec{b}|$
(c) $2|\vec{a} + \vec{b}|$ (d) $2|\vec{a} - \vec{b}|$
12. The position vectors of two points A and B are \vec{a} and \vec{b} respectively. Then $|\vec{a} + \vec{b}|$ [BIT Ranchi 1992]
- (a) 2 (b) 3
(c) 4 (d) 5
13. The magnitudes of mutually perpendicular forces \mathbf{a} , \mathbf{b} and \mathbf{c} are 2, 10 and 11 respectively. Then the magnitude of its resultant is [IIT 1984]
- (a) 12 (b) 15
(c) 9 (d) None
14. The system of vectors \vec{a} , \vec{b} and \vec{c} is
- (a) Orthogonal (b) Coplanar
(c) Collinear (d) None of these
15. The direction cosines of the resultant of the vectors \vec{a} and \vec{b} are $\frac{1}{\sqrt{2}}$ and $\frac{1}{\sqrt{2}}$
- (a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{\sqrt{3}}$
(c) $\frac{1}{\sqrt{5}}$ (d) $\frac{1}{\sqrt{6}}$
16. The position vectors of P and Q are \vec{a} and \vec{b} respectively. If the distance between them is 7, then the value of a will be
- (a) $-5, 1$ (b) $5, 1$
(c) $0, 5$ (d) $1, 0$
17. A zero vector has
- (a) Any direction (b) No direction
(c) Many directions (d) None of these
18. A unit vector \mathbf{a} makes an angle θ with z -axis. If \mathbf{a} is a unit vector, then \mathbf{a} is equal to [IIT 1988]
- (a) $\cos\theta \mathbf{i} + \sin\theta \mathbf{j}$ (b) $\cos\theta \mathbf{i} + \sin\theta \mathbf{k}$
(c) $\sin\theta \mathbf{i} + \cos\theta \mathbf{j}$ (d) None of these
19. A force is a
- (a) Unit vector (b) Localised vector
(c) Zero vector (d) Free vector
20. If \mathbf{a} , \mathbf{b} , \mathbf{c} , \mathbf{d} be the position vectors of the points A , B , C and D respectively referred to same origin O such that no three of these points are collinear and $\vec{a} + \vec{b} + \vec{c} + \vec{d} = \vec{0}$ then quadrilateral $ABCD$ is a
- (a) Square (b) Rhombus
(c) Rectangle (d) Parallelogram
21. If the position vectors of A and B are \vec{a} and \vec{b} then the direction cosine of $\vec{a} + \vec{b}$ along y -axis is [MNR 1989]
- (a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{\sqrt{3}}$
(c) $-\frac{1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{5}}$
22. If the resultant of two forces is of magnitude P and equal to one of them and perpendicular to it, then the other force is [MNR 1986]
- (a) $\frac{P}{2}$ (b) $\frac{P}{\sqrt{2}}$
(c) $\frac{P}{\sqrt{3}}$ (d) None of these
23. The direction cosines of vector \vec{a} in the direction of positive axis of x , is [MP PET 1991]
- (a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{\sqrt{3}}$
(c) $\frac{1}{\sqrt{5}}$ (d) $\frac{1}{\sqrt{6}}$
24. The point having position vectors \vec{a} and \vec{b} are the vertices of [EAMCET 1988]
- (a) Right angled triangle (b) Isosceles triangle
(c) Equilateral triangle (d) Collinear
25. Let λ be distinct real numbers. The points with position vectors $\vec{a} + \lambda\vec{b}$ and $\vec{b} + \lambda\vec{a}$ [IIT Screening 1994]
- (a) Are collinear
(b) Form an equilateral triangle
(c) Form a scalene triangle
(d) Form a right angled triangle
26. If \vec{a} and \vec{b} are two non-zero and non-collinear vectors, then $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$ are [EAMCET 1994]
- (a) 6 (b) 5
(c) 4 (d) 3
27. If $OP = 8$ and \vec{a} makes angles θ and ϕ with OX -axis and OY -axis respectively, then
- (a) $8 \cos\theta \cos\phi$ (b) $8 \sin\theta \sin\phi$
(c) $8 \cos\theta \sin\phi$ (d) $8 \sin\theta \cos\phi$
28. If \mathbf{a} and \mathbf{b} are two non-zero and non-collinear vectors, then $\mathbf{a} + \mathbf{b}$ and $\mathbf{a} - \mathbf{b}$ are [MP PET 1997]
- (a) Linearly dependent vectors
(b) Linearly independent vectors
(c) Linearly dependent and independent vectors
(d) None of these
29. If the vectors \vec{a} and \vec{b} and \vec{c} form a triangle, then it is [Karnataka CET 1999]



- (a) Right angled (b) Obtuse angled
(c) Equilateral (d) Isosceles
30. If the resultant of two forces of magnitudes P and Q acting at a point at an angle of θ is R then P/Q is _____
[Roorkee 1999]
- (a) 1 (b) $\frac{R}{P}$
(c) 2 (d) 4
31. The direction cosines of the vector \vec{r} are $\frac{1}{\sqrt{2}}$, $\frac{1}{\sqrt{2}}$, $\frac{1}{\sqrt{2}}$ are _____
[Karnataka CET 2000]
- (a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{\sqrt{3}}$
(c) $\frac{1}{\sqrt{6}}$ (d) $\frac{1}{\sqrt{12}}$
32. The position vectors of A and B are \vec{a} and \vec{b} respectively, then the magnitude of $\vec{a} + \vec{b}$ is _____
[MP PET 2000]
- (a) 11 (b) 12
(c) 13 (d) 14
33. If the position vectors of P and Q are \vec{p} and \vec{q} and $\vec{r} = \vec{p} + \vec{q}$ then \vec{r} is _____ [MP PET 2001, 03]
- (a) \vec{p} (b) \vec{q}
(c) $\frac{1}{2}(\vec{p} + \vec{q})$ (d) $\frac{1}{\sqrt{2}}(\vec{p} + \vec{q})$
34. If \vec{a} is non zero vector of modulus a and m is a non-zero scalar, then $m\vec{a}$ is a unit vector if _____ [MP PET 2002]
- (a) $\frac{1}{a}$ (b) $\frac{1}{m}$
(c) $\frac{1}{am}$ (d) $\frac{1}{a^2m}$
35. The position vectors of the points A, B, C are $\vec{a}, \vec{b}, \vec{c}$ and $\vec{a} + \vec{b} + \vec{c} = \vec{0}$ respectively. These points _____ [Kurukshehra CEE 2002]
- (a) Form an isosceles triangle
(b) Form a right-angled triangle
(c) Are collinear
(d) Form a scalene triangle
36. The vectors $\vec{a}, \vec{b}, \vec{c}$ and \vec{d} are the sides of a triangle $ABCD$. The length of the median through A is _____ [AIIEEE 2003]
- (a) $\frac{1}{2}(\vec{b} + \vec{c})$ (b) $\frac{1}{2}(\vec{c} + \vec{d})$
(c) $\frac{1}{2}(\vec{d} + \vec{a})$ (d) $\frac{1}{2}(\vec{a} + \vec{b})$
37. If the position vectors of the vertices A, B, C of a triangle ABC are $\vec{a}, \vec{b}, \vec{c}$ and $\vec{a} + \vec{b} + \vec{c} = \vec{0}$ respectively, the triangle is _____ [UPSEAT 2004]
- (a) Equilateral
(b) Isosceles
(c) Scalene
(d) Right angled and isosceles also
38. The figure formed by the four points $\vec{a}, \vec{b}, \vec{c}, \vec{d}$ and $\vec{a} + \vec{b} + \vec{c} + \vec{d} = \vec{0}$ is _____ [MP PET 2004]
- (a) Rectangle (b) Parallelogram
(c) Trapezium (d) None of these
39. ABC is an isosceles triangle right angled at A . Forces of magnitude $10\sqrt{2}$ and 6 act along AB and AC respectively. The magnitude of their resultant force is _____ [Roorkee 1999]
- (a) 4 (b) 5
(c) $10\sqrt{2}$ (d) 30
40. If $ABCDEF$ is a regular hexagon and $\vec{a}, \vec{b}, \vec{c}, \vec{d}, \vec{e}, \vec{f}$ are the position vectors of A, B, C, D, E, F respectively then $\vec{a} + \vec{b} + \vec{c} + \vec{d} + \vec{e} + \vec{f}$ is _____ [RPET 1985]
- (a) 2 (b) 3
(c) 4 (d) 6
41. If P and Q be the middle points of the sides BC and CD of the parallelogram $ABCD$, then $\vec{AP} + \vec{AQ}$ is _____
- (a) \vec{AC} (b) $\frac{1}{2}\vec{AC}$
(c) $\frac{1}{2}\vec{AD}$ (d) $\frac{1}{2}\vec{BD}$
42. P is a point on the side BC of the triangle ABC and Q is a point such that \vec{PQ} is the resultant of \vec{PA} and \vec{QA} . Then $ABQC$ is a _____
- (a) Square (b) Rectangle
(c) Parallelogram (d) Trapezium
43. In the figure, a vector \vec{x} satisfies the equation $\vec{x} = \frac{1}{2}(\vec{a} + \vec{b})$. Then \vec{x} is _____
-
- (a) $\frac{1}{2}(\vec{a} + \vec{b})$ (b) $\frac{1}{2}(\vec{b} + \vec{c})$
(c) $\frac{1}{2}(\vec{c} + \vec{d})$ (d) $\frac{1}{2}(\vec{d} + \vec{a})$
44. A vector coplanar with the non-collinear vectors \vec{a} and \vec{b} is _____
- (a) $\vec{a} + \vec{b}$ (b) $\vec{a} - \vec{b}$
(c) $\vec{a} \times \vec{b}$ (d) None of these
45. If $ABCD$ is a parallelogram, $\vec{a}, \vec{b}, \vec{c}, \vec{d}$ are the position vectors of A, B, C, D respectively and $\vec{a} + \vec{b} + \vec{c} + \vec{d} = \vec{0}$ then the unit vector in the direction of BD is _____ [Roorkee 1976]
- (a) $\frac{\vec{b} - \vec{d}}{|\vec{b} - \vec{d}|}$ (b) $\frac{\vec{d} - \vec{b}}{|\vec{d} - \vec{b}|}$
(c) $\frac{\vec{c} - \vec{a}}{|\vec{c} - \vec{a}|}$ (d) $\frac{\vec{a} - \vec{c}}{|\vec{a} - \vec{c}|}$



46. If \mathbf{a} , \mathbf{b} and \mathbf{c} be three non-zero vectors, no two of which are collinear. If the vector $\mathbf{a} + \mathbf{b}$ is collinear with \mathbf{c} and $\mathbf{a} + \mathbf{c}$ is collinear with \mathbf{a} , then (λ being some non-zero scalar) λ is equal to [AIEEE 2004]
- (a) $\frac{1}{2}$ (b) $\frac{1}{3}$
 (c) $\frac{1}{4}$ (d) $\frac{1}{5}$
47. If \mathbf{a} and \mathbf{b} then the unit vector along $\mathbf{a} + \mathbf{b}$ will be [RPET 1985, 95]
- (a) $\frac{\mathbf{a} + \mathbf{b}}{|\mathbf{a} + \mathbf{b}|}$ (b) $\frac{\mathbf{a} - \mathbf{b}}{|\mathbf{a} - \mathbf{b}|}$
 (c) $\frac{\mathbf{a} + \mathbf{b}}{|\mathbf{a}| + |\mathbf{b}|}$ (d) $\frac{\mathbf{a} - \mathbf{b}}{|\mathbf{a}| - |\mathbf{b}|}$
48. What should be added in vector \mathbf{a} to get its resultant a unit vector \mathbf{i} [Roorkee 1977]
- (a) $\mathbf{i} - \mathbf{a}$ (b) $\mathbf{j} - \mathbf{a}$
 (c) $\mathbf{k} - \mathbf{a}$ (d) None of these
49. If \mathbf{a} and \mathbf{b} then the unit vector along its resultant is [Roorkee 1980]
- (a) $\frac{\mathbf{a} + \mathbf{b}}{|\mathbf{a} + \mathbf{b}|}$ (b) $\frac{\mathbf{a} - \mathbf{b}}{|\mathbf{a} - \mathbf{b}|}$
 (c) $\frac{\mathbf{a} + \mathbf{b}}{|\mathbf{a}| + |\mathbf{b}|}$ (d) None of these
50. In a regular hexagon $ABCDEF$, $\mathbf{a} = \overrightarrow{AB}$, $\mathbf{b} = \overrightarrow{BC}$, $\mathbf{c} = \overrightarrow{CD}$, $\mathbf{d} = \overrightarrow{DE}$, $\mathbf{e} = \overrightarrow{EF}$, $\mathbf{f} = \overrightarrow{FA}$ [MNR 1984]
- (a) $\mathbf{a} + \mathbf{b} + \mathbf{c} + \mathbf{d} + \mathbf{e} + \mathbf{f} = \mathbf{0}$ (b) $\mathbf{a} + \mathbf{b} + \mathbf{c} + \mathbf{d} = \mathbf{0}$
 (c) $\mathbf{a} + \mathbf{b} + \mathbf{c} + \mathbf{e} + \mathbf{f} = \mathbf{0}$ (d) None of these
51. $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are three non-coplanar vectors. If $\mathbf{d} = \mathbf{a} + \mathbf{b} + \mathbf{c}$ [IIT 1988]
- (a) \mathbf{d} is coplanar with $\mathbf{a}, \mathbf{b}, \mathbf{c}$ (b) \mathbf{d} is perpendicular to $\mathbf{a}, \mathbf{b}, \mathbf{c}$
 (c) \mathbf{d} is parallel to $\mathbf{a}, \mathbf{b}, \mathbf{c}$ (d) None of these
52. $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are three non-coplanar vectors. If $\mathbf{d} = \mathbf{a} + \mathbf{b} + \mathbf{c}$ where \mathbf{a}, \mathbf{b} and \mathbf{c} being non-zero, non-coplanar vectors, then the vector \mathbf{d} is equal to
- (a) $\mathbf{a} + \mathbf{b} + \mathbf{c}$ (b) $\mathbf{a} + \mathbf{b} - \mathbf{c}$
 (c) $\mathbf{a} - \mathbf{b} + \mathbf{c}$ (d) $\mathbf{a} - \mathbf{b} - \mathbf{c}$
53. In a trapezium, the vector \overrightarrow{AB} and \overrightarrow{CD} are parallel. We will then find that \overrightarrow{AC} is collinear with \overrightarrow{BD} . If $\overrightarrow{AC} = \lambda \overrightarrow{BD}$ then
- (a) $\lambda = \frac{AB}{CD}$ (b) $\lambda = \frac{CD}{AB}$
 (c) $\lambda = \frac{AD}{BC}$ (d) $\lambda = \frac{BC}{AD}$
54. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are three non-coplanar vectors. If $\mathbf{d} = \mathbf{a} + \mathbf{b} + \mathbf{c}$ then the magnitude of \mathbf{d} is [MP PET 1996]
- (a) $|\mathbf{a}| + |\mathbf{b}| + |\mathbf{c}|$ (b) $\sqrt{|\mathbf{a}|^2 + |\mathbf{b}|^2 + |\mathbf{c}|^2}$
 (c) $\sqrt{|\mathbf{a}|^2 + |\mathbf{b}|^2 + |\mathbf{c}|^2 + 2|\mathbf{a}||\mathbf{b}| + 2|\mathbf{a}||\mathbf{c}| + 2|\mathbf{b}||\mathbf{c}|}$ (d) $\sqrt{|\mathbf{a}|^2 + |\mathbf{b}|^2 + |\mathbf{c}|^2 + 2|\mathbf{a}||\mathbf{b}| + 2|\mathbf{a}||\mathbf{c}| + 2|\mathbf{b}||\mathbf{c}|}$
55. A, B, C, D, E are five coplanar points, then $\overrightarrow{AB} + \overrightarrow{BC} + \overrightarrow{CD} + \overrightarrow{DE} + \overrightarrow{EA}$ is equal to [RPET 1999]
- (a) $\mathbf{0}$ (b) \overrightarrow{AB}
 (c) \overrightarrow{BC} (d) \overrightarrow{CD}
56. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are three non-coplanar vectors. If $\mathbf{d} = \mathbf{a} + \mathbf{b} + \mathbf{c}$ then \mathbf{d} is [MP PET 2001]
- (a) \mathbf{d} is coplanar with $\mathbf{a}, \mathbf{b}, \mathbf{c}$ (b) \mathbf{d} is perpendicular to $\mathbf{a}, \mathbf{b}, \mathbf{c}$
 (c) \mathbf{d} is parallel to $\mathbf{a}, \mathbf{b}, \mathbf{c}$ (d) None of these
57. Five points given by A, B, C, D, E are in a plane. Three forces $\mathbf{a}, \mathbf{b}, \mathbf{c}$ act at A and three forces $\mathbf{d}, \mathbf{e}, \mathbf{f}$ act at B . Then their resultant is [AMU 2001]
- (a) $\mathbf{a} + \mathbf{b} + \mathbf{c} + \mathbf{d} + \mathbf{e} + \mathbf{f}$ (b) $\mathbf{a} + \mathbf{b} + \mathbf{c}$
 (c) $\mathbf{d} + \mathbf{e} + \mathbf{f}$ (d) $\mathbf{0}$
58. The sum of two forces is 18 N and resultant whose direction is at right angles to the smaller force is 12 N . The magnitude of the two forces are [AIEEE 2002]
- (a) 13, 5 (b) 12, 6
 (c) 14, 4 (d) 11, 7
59. The unit vector parallel to the resultant vector of $\mathbf{a} + \mathbf{b}$ and \mathbf{c} is [MP PET 2003]
- (a) $\frac{\mathbf{a} + \mathbf{b} + \mathbf{c}}{|\mathbf{a} + \mathbf{b} + \mathbf{c}|}$ (b) $\frac{\mathbf{a} + \mathbf{b}}{|\mathbf{a} + \mathbf{b}|} + \frac{\mathbf{c}}{|\mathbf{c}|}$
 (c) $\frac{\mathbf{a} + \mathbf{b} + \mathbf{c}}{|\mathbf{a}| + |\mathbf{b}| + |\mathbf{c}|}$ (d) $\frac{\mathbf{a} + \mathbf{b}}{|\mathbf{a} + \mathbf{b}|} + \frac{\mathbf{c}}{|\mathbf{c}|}$
60. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are the position vectors of the vertices A, B, C of the triangle ABC , then the centroid of ABC is [MP PET 1987]
- (a) $\frac{\mathbf{a} + \mathbf{b} + \mathbf{c}}{3}$ (b) $\frac{\mathbf{a} + \mathbf{b} + \mathbf{c}}{2}$
 (c) $\frac{\mathbf{a} + \mathbf{b} + \mathbf{c}}{4}$ (d) $\frac{\mathbf{a} + \mathbf{b} + \mathbf{c}}{5}$
61. If in the given figure $\mathbf{a} = \overrightarrow{OA}$ and $\mathbf{b} = \overrightarrow{OB}$ then \overrightarrow{OP} is [RPET 1981; MP PET 1988]
- (a) $\frac{\mathbf{a} + \mathbf{b}}{2}$ (b) $\frac{\mathbf{a} + \mathbf{b}}{3}$
 (c) $\frac{\mathbf{a} + \mathbf{b}}{4}$ (d) $\frac{\mathbf{a} + \mathbf{b}}{5}$



- (c) (d)
62. If D, E, F be the middle points of the sides BC, CA and AB of the triangle ABC , then is
- (a) A zero vector (b) A unit vector
(c) 0 (d) None of these
63. If \mathbf{a} and \mathbf{b} are the position vectors of A and B respectively, then the position vector of a point C on AB produced such that is [MNR 1980; MP PET 1995, 99]
- (a) (b)
(c) (d)
64. The position vectors of A and B are and The position vector of the middle point of the line AB is [MP PET 1988]
- (a) (b)
(c) (d) None of these
65. If $ABCD$ is a parallelogram and the position vectors of A, B, C are and then the position vector of D will be
- (a) (b)
(c) (d)
66. P is the point of intersection of the diagonals of the parallelogram $ABCD$. If O is any point, then [RPET 1989; J & K 2005]
- (a) (b)
(c) (d)
67. If the position vectors of the point A, B, C be $\mathbf{i}, \mathbf{j}, \mathbf{k}$ respectively and P be a point such that then the position vector of P is
- (a) (b)
(c) (d) None of these
68. If the position vectors of the points A, B, C, D be and respectively, then [MNR 1982]
- (a) (b)
(c) (d) None of these
69. If the position vector of one end of the line segment AB be and the position vector of its middle point be then the position vector of the other end is
- (a) (b)
(c) (d)
70. If G and G' be the centroids of the triangles ABC and respectively, then
- (a) (b)
(c) (d)
71. If O be the circumcentre and O' be the orthocentre of the triangle ABC , then
- (a) (b)
(c) (d) $\mathbf{0}$
72. If the vectors represented by the sides AB and BC of the regular hexagon $ABCDEF$ be \mathbf{a} and \mathbf{b} , then the vector represented by will be
- (a) (b)
(c) (d)
73. The position vector of a point C with respect to B is and that of B with respect to A is The position vector of C with respect to A is [MP PET 1989]
- (a) $2\mathbf{i}$ (b) $2\mathbf{j}$
(c) $-2\mathbf{j}$ (d) $-2\mathbf{i}$
74. A and B are two points. The position vector of A is A point P divides the line AB in the ratio $1 : 2$. If is the position vector of P , then the position vector of B is given by [MP PET 1993]
- (a) (b)
(c) (d)
75. If the position vectors of the points A and B are and then what will be the position vector of the mid point of AB [MP PET 1992]
- (a) (b)
(c) (d)
76. If C is the middle point of AB and P is any point outside AB , then [MNR 1991; UPSEAT 2000; AIEEE 2005]
- (a) (b)
(c) (d)
77. If in a triangle and D, E are the mid-points of AB and AC respectively, then is equal to [RPET 1986]
- (a) (b)
(c) (d)
78. In the triangle ABC , , then [RPET 1984]



- (a) (b) (c) (d)
79. $ABCDE$ is a pentagon. Forces act at a point. Which force should be added to this system to make the resultant [MNR 1984]
- (a) (b) (c) (d)
80. Let A and B be points with position vectors \mathbf{a} and \mathbf{b} with respect to the origin O . If the point C on OA is such that is parallel to OB and then is equal to
- (a) (b) (c) (d)
81. In a triangle ABC , if then equals [IIT 1988; Pb. CET 2003]
- (a) (b) (c) (d) None of these
82. If then A, B, C form [IIT 1983]
- (a) Equilateral triangle (b) Right angled triangle
(c) Isosceles triangle (d) Line
83. The sum of the three vectors determined by the medians of a triangle directed from the vertices is [MP PET 1997]
- (a) 0 (b) 1
(c) -1 (d)
84. The position vector of the points which divides internally in the ratio $2 : 3$ the join of the points and is [AI CBSE 1985]
- (a) (b) (c) (d) None of these
85. If position vector of points A, B, C are respectively $\mathbf{i}, \mathbf{j}, \mathbf{k}$ and then position vector of point X is [MP PET 1994]
- (a) (b) (c) (d)
86. If \mathbf{a} and \mathbf{b} are $P.V.$ of two points A and B and C divides AB in ratio $2 : 1$, then $P.V.$ of C is [RPET 1996]
- (a) (b) (c) (d)
- (c) (d)
87. If are the vertices of a triangle whose position vectors are $\mathbf{a}, \mathbf{b}, \mathbf{c}$ and G is the centroid of the then is [Karnataka CET 2000]
- (a) $\mathbf{0}$ (b)
(c) (d)
88. If O is origin and C is the mid point of and . Then value of is [RPET 2001]
- (a) $\mathbf{i} + \mathbf{j}$ (b) $\mathbf{i} - \mathbf{j}$
(c) $-\mathbf{i} + \mathbf{j}$ (d) $-\mathbf{i} - \mathbf{j}$
89. If is regular hexagon, then [Karnataka CET 2002]
- (a) 0 (b)
(c) (d)
90. If position vectors of a point A is $\mathbf{a} + 2\mathbf{b}$ and \mathbf{a} divides AB in the ratio , then the position vector of B is [MP PET 2002]
- (a) $2\mathbf{a} - \mathbf{b}$ (b) $\mathbf{b} - 2\mathbf{a}$
(c) $\mathbf{a} - 3\mathbf{b}$ (d) \mathbf{b}
91. If are respectively the mid points of and in , then [EAMCET 2003]
- (a) (b)
(c) (d)
92. If and are the position vectors of the vertices A, B and C respectively of triangle ABC . The position vector of the point where the bisector of angle A meets BC is [Pb. CET 2004]
- (a) (b)
(c) (d)
93. If and , then a unit vector coplanar with \mathbf{a} and \mathbf{b} and perpendicular to \mathbf{a} is
- (a) \mathbf{i} (b) \mathbf{j}
(c) \mathbf{k} (d) None of these
94. If the position vectors of the points A, B, C be and respectively, then the points A, B, C are collinear if
- (a) (b) and are arbitrary scalars



- (c) _____
 (d) _____ and b is arbitrary scalars
95. If the points _____ and _____ be collinear, then $k =$
 (a) 0 (b) 2
 (c) -2 (d) Any real number
96. If the position vectors of the points A, B, C be _____, _____, _____ respectively, then the points A, B, C are _____
 [MP PET 1989]
 (a) Collinear (b) Non-collinear
 (c) Form a right angled triangle (d) None of these
97. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are non-collinear vectors such that for some scalars $x, y, z,$ _____ then _____ [RPET 2002]
 (a) _____ (b) _____
 (c) _____ (d) _____
98. The vectors _____ and _____ are collinear, if _____
 [RPET 1986; MP PET 1988]
 (a) _____ (b) _____
 (c) _____ (d) _____
99. The points with position vectors _____, _____, _____ are collinear, if _____
 [RPET 1991; IIT 1983; MP PET 2002]
 (a) -40 (b) 40
 (c) 20 (d) None of these
100. If O be the origin and the position vector of A be _____ then a unit vector parallel to _____ is _____
 (a) _____ (b) _____
 (c) _____ (d) _____
101. If the position vectors of the points A and B be _____ and _____ then the line AB is parallel to _____
 (a) xy -plane (b) yz -plane
 (c) zx -plane (d) None of these
102. The points with position vectors _____ and _____ are collinear, if _____
 [MNR 1992; Kurukshetra CEE 2002]
 (a) -8 (b) 4
 (c) 8 (d) 12
103. Three points whose position vectors are _____ and _____ will be collinear, if the value of k is _____ [IIT 1984]
 (a) Zero
 (b) Only negative real number
 (c) Only positive real number
 (d) Every real number
104. If the position vectors of A, B, C, D are _____ and _____ respectively and _____, then _____ will be _____ [RPET 1988]
 (a) -8 (b) -6
 (c) 8 (d) 6
105. If the vectors _____ and _____ are parallel, then the value of x and y will be _____ [RPET 1985, 86]
 (a) $-1, -2$ (b) $1, -2$
 (c) $-1, 2$ (d) $1, 2$
106. If _____ and _____ then the value of λ will be _____ [IIT 1982; RPET 1984]
 (a) $-2, 0$ (b) $0, -2$
 (c) $-1, 0$ (d) $0, -1$
107. The vectors \mathbf{a}, \mathbf{b} and $\mathbf{a} + \mathbf{b}$ are _____
 (a) Collinear (b) Coplanar
 (c) Non-coplanar (d) None of these
108. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are the position vectors of three collinear points, then the existence of x, y, z is such that _____
 (a) _____
 (b) _____
 (c) _____
 (d) _____
109. If _____ and _____ then the vector parallel to _____ is _____
 (a) $(3, 5)$ (b) $(1, 1)$
 (c) $(1, 3)$ (d) $(8, 5)$
110. The vectors \mathbf{a} and \mathbf{b} are non-collinear. The value of x for which the vectors _____ and _____ are collinear, is _____
 (a) 1 (b) _____
 (c) _____ (d) None of these
111. The vectors _____ are collinear, if λ equals _____ [Kurukshetra CEE 1996]
 (a) 3 (b) 4
 (c) 5 (d) 6
112. The position vectors of four points P, Q, R, S are _____ and _____ respectively, then _____ [MP PET 1997]
 (a) _____ is parallel to _____
 (b) _____ is not parallel to _____
 (c) _____ is equal to _____
 (d) _____ is parallel and equal to _____
113. If _____ and _____ are two collinear vectors, then $m =$ _____ [MP PET 1998]



- (a) 4 (b) 3
(c) 2 (d) 0
114. If three points A, B, C are collinear, whose position vectors are $\vec{a}, \vec{b}, \vec{c}$ respectively, then the ratio in which B divides AC is [RPET 1999]
(a) 1 : 2 (b) 2 : 3
(c) 2 : 1 (d) 1 : 1
115. If \mathbf{a} and \mathbf{b} are two non-collinear vectors and $\mathbf{c} = x\mathbf{a} + y\mathbf{b}$ [RPET 2001]
(a) $x = 0$, but y is not necessarily zero
(b) $y = 0$, but x is not necessarily zero
(c) $x = y$
(d) None of these
116. If three points A, B and C have position vectors $\vec{a}, \vec{b}, \vec{c}$ and $\vec{c} = x\vec{a} + y\vec{b}$ respectively and if they are collinear, then $x + y =$ [EAMCET 2002]
(a) $(2, -3)$ (b) $(-2, 3)$
(c) $(2, 3)$ (d) $(-2, -3)$
117. \mathbf{a} and \mathbf{b} are two non-collinear vectors, then $x\mathbf{a} + y\mathbf{b}$ (where x and y are scalars) represents a vector which is [MP PET 2003]
(a) Parallel to \mathbf{b} (b) Parallel to \mathbf{a}
(c) Coplanar with \mathbf{a} and \mathbf{b} (d) None of these
118. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are three non-coplanar vectors such that $\mathbf{c} = x\mathbf{a} + y\mathbf{b}$ and $\mathbf{a} \cdot \mathbf{b} = 0$ then $x^2 + y^2 =$ is equal to [MP PET 2003]
(a) 0 (b) $\frac{1}{2}$
(c) $\frac{1}{4}$ (d) $\frac{1}{8}$
119. The value of k for which the vectors $\mathbf{a}, \mathbf{b}, \mathbf{c}$ and \mathbf{d} are collinear is [Ph. CET 2004]
(a) 2 (b) $\frac{1}{2}$
(c) $\frac{1}{4}$ (d) 3

Scalar or Dot product of two vectors and its applications

1. If $\mathbf{a} \cdot \mathbf{b} = 0$ and $\mathbf{a} \cdot \mathbf{c} = 0$ then $\mathbf{a} \cdot (\mathbf{b} + \mathbf{c}) =$ [Karnataka CET 2004]
(a) \mathbf{a} (b) $2\mathbf{a}$
(c) 0 (d) None of these
2. If $\mathbf{a} \cdot \mathbf{b} = 0$ and $\mathbf{a} \cdot \mathbf{c} = 0$ then $\mathbf{a} \cdot (\mathbf{b} + \mathbf{c}) =$
(a) \mathbf{a} (b) $2\mathbf{a}$
(c) 0 (d) None of these

3. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are non-zero vectors such that $\mathbf{a} \cdot \mathbf{b} = \mathbf{a} \cdot \mathbf{c}$ then which statement is true [RPET 2001]
(a) $\mathbf{b} = \mathbf{c}$ (b) $\mathbf{a} \cdot (\mathbf{b} - \mathbf{c}) = 0$
(c) $\mathbf{a} \perp (\mathbf{b} - \mathbf{c})$ or (d) None of these
4. If \mathbf{a} and \mathbf{b} be unlike vectors, then $\mathbf{a} \cdot \mathbf{b} =$
(a) $|\mathbf{a}| |\mathbf{b}|$ (b) $-|\mathbf{a}| |\mathbf{b}|$
(c) 0 (d) None of these
5. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are unit vectors such that $\mathbf{a} \cdot \mathbf{b} = \mathbf{a} \cdot \mathbf{c}$ then $\mathbf{b} \cdot \mathbf{c} =$ [MP PET 1988; Karnataka CET 2000; UPSEAT 2003, 04]
(a) 1 (b) 3
(c) $-\frac{3}{2}$ (d) $\frac{3}{2}$
6. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are mutually perpendicular vectors of equal magnitudes, then the angle between the vectors \mathbf{a} and $\mathbf{b} + \mathbf{c}$ is
(a) 45° (b) 60°
(c) 90° (d) 120°
7. If $\mathbf{a}, \mathbf{b}, \mathbf{c}$ are mutually perpendicular unit vectors, then $(\mathbf{a} + \mathbf{b}) \cdot (\mathbf{b} + \mathbf{c}) =$ [Karnataka CET 2002, 05; J & K 2005]
(a) 1 (b) 3
(c) 1 (d) 0
8. If $\mathbf{a} \cdot \mathbf{b} = 0$ and $\mathbf{a} \cdot \mathbf{c} = 0$ then the angle between \mathbf{a} and $\mathbf{b} + \mathbf{c}$ is
(a) 45° (b) 60°
(c) 90° (d) None of these
9. If \mathbf{a} has magnitude 5 and points north-east and vector \mathbf{b} has magnitude 5 and points north-west, then $\mathbf{a} \cdot \mathbf{b} =$ [MNR 1984]
(a) 25 (b) 5
(c) $-\frac{25}{2}$ (d) $-\frac{5}{2}$
10. If θ be the angle between the unit vectors \mathbf{a} and \mathbf{b} , then $(\mathbf{a} + \mathbf{b}) \cdot (\mathbf{a} - \mathbf{b}) =$ [MP PET 1998; Ph. CET 2002]
(a) $2 \cos \theta$ (b) $2 \sin \theta$
(c) $2 \cos^2 \theta$ (d) $2 \sin^2 \theta$
11. If $\mathbf{a} \cdot \mathbf{b} = 0$ and $\mathbf{a} \cdot \mathbf{c} = 0$ then the angle between \mathbf{a} and $\mathbf{b} + \mathbf{c}$ is [MP PET 1989; Bihar CEE 1994]
(a) 45° (b) 60°
(c) 90° (d) 120°
12. If $\mathbf{a} \cdot \mathbf{b} = 0$ then the angle between \mathbf{a} and \mathbf{b} is
(a) Acute (b) Obtuse



- (c) _____ (d) _____
13. If \mathbf{a} , \mathbf{b} , \mathbf{c} are three vectors such that _____ and the angle between \mathbf{b} and \mathbf{c} is _____ then _____
 [EAMCET 2003]
 (a) _____ (b) _____
 (c) _____ (d) _____
 (Note : Here _____)
14. If the angle between the vectors \mathbf{a} and \mathbf{b} be θ and then the true statement is
 (a) \mathbf{a} and \mathbf{b} are equal vectors
 (b) \mathbf{a} and \mathbf{b} are like vectors
 (c) \mathbf{a} and \mathbf{b} are unlike vectors
 (d) \mathbf{a} and \mathbf{b} are unit vectors
15. If the vector _____ makes angles _____ with vectors _____ respectively, then
 (a) _____ (b) _____
 (c) _____ (d) _____
16. _____
 (a) _____ (b) _____
 (c) 0 _____ (d) None of these
17. The value of b such that scalar product of the vectors _____ with the unit vector parallel to the sum of the vectors _____ and _____ is 1, is _____
 [MNR 1992; Roorkee 1985, 95; Kurukshetra CEE 1998; UPSEAT 2000]
 (a) -2 _____ (b) -1 _____
 (c) 0 _____ (d) 1 _____
18. If a unit vector lies in yz -plane and makes angles of _____ and _____ with the positive y -axis and z -axis respectively, then its components along the co-ordinate axes will be
 (a) _____ (b) _____
 (c) _____ (d) _____
19. If _____ and _____ then the scalar product of _____ and _____ will be _____ [Roorkee 1980]
 (a) 3 _____ (b) 6 _____
 (c) 9 _____ (d) 12 _____
20. If the moduli of \mathbf{a} and \mathbf{b} are equal and angle between them is _____ and _____ then $|\mathbf{a}|$ is equal to _____ [RPET 1986]
 (a) -5 _____ (b) -4 _____
 (c) 4 _____ (d) 5 _____
21. If _____ and the angle between \mathbf{a} and \mathbf{b} be _____, then _____
 (a) 25 _____ (b) 12 _____
 (c) 13 _____ (d) 7 _____
22. A vector whose modulus is _____ and makes the same angle with _____ and _____ will be _____ [Roorkee 1987]
 (a) _____ (b) _____
 (c) _____ (d) _____
23. If \mathbf{a} , \mathbf{b} , \mathbf{c} are coplanar vectors, then _____ [IIT 1989]
 (a) _____ (b) _____
 (c) _____ (d) _____
24. If _____ is a unit vector perpendicular to plane of vector \mathbf{a} and \mathbf{b} and angle between them is θ , then $\mathbf{a} \cdot \mathbf{b}$ will be _____ [RPET 1985]
 (a) _____ (b) _____
 (c) _____ (d) _____
25. If _____ and _____ then a vector along \mathbf{r} which is linear combination of \mathbf{p} and \mathbf{q} and also perpendicular to \mathbf{q} is _____ [MNR 1986]
 (a) _____ (b) _____
 (c) _____ (d) None of these
26. If _____ and _____ then _____ is equal to _____
 (a) _____ (b) _____
 (c) _____ (d) _____
27. The horizontal force and the force inclined at an angle _____ with the vertical, whose resultant is in vertical direction of _____ P kg, are _____ [IIT 1983]
 (a) $P, 2P$ _____ (b) _____
 (c) _____ (d) None of these
28. If \mathbf{a} and \mathbf{b} are mutually perpendicular vectors, then _____ [MP PET 1994; Pb. CET 2002]
 (a) _____ (b) _____
 (c) _____ (d) _____
29. _____ then _____ [RPET 1995]



- (a) _____
 (b) $\mathbf{a} \parallel \mathbf{b}$
 (c) Angle between \mathbf{a} and \mathbf{b} is _____
 (d) None of these
30. If _____ and _____ then _____
 [MP PET 1995; RPET 2000]
 (a) -13 (b) -10
 (c) 13 (d) 10
31. If $ABCDEF$ is regular hexagon, the length of whose side is a , then _____
 (a) a (b) _____
 (c) _____ (d) 0
32. If in a right angled triangle ABC , the hypotenuse _____ then _____ is equal to _____
 (a) _____ (b) _____
 (c) _____ (d) None of these
33. A, B, C, D are any four points, then _____
 [MNR 1986]
 (a) _____ (b) _____
 (c) _____ (d) 0
34. The vector \mathbf{a} coplanar with the vectors \mathbf{i} and \mathbf{j} , perpendicular to the vector _____ such that _____ is _____
 (a) _____ or _____
 (b) _____ or _____
 (c) _____ or _____
 (d) _____ or _____
35. If \mathbf{a} is any vector in space, then _____ [MP PET 1997]
 (a) _____
 (b) _____
 (c) _____
 (d) _____
36. If vectors _____ satisfy the condition _____, then _____ is equal to _____ [AMU 1999]
 (a) 0 (b) -1
 (c) 1 (d) 2
37. $(\mathbf{a} \cdot \mathbf{b}) \mathbf{c}$ and $(\mathbf{a} \cdot \mathbf{c}) \mathbf{b}$ are _____ [RPET 2000]
 (a) Two like vectors
- (b) Two equal vectors
 (c) Two vectors in direction of \mathbf{a}
 (d) None of these
38. If _____, _____ and \mathbf{i} is the unit vector in the x -direction, then _____ [Karnataka CET 2001]
 (a) 11 (b) 15
 (c) 18 (d) 36
39. For any three non-zero vectors _____ and _____, _____ . Then which of the following is false [AMU 2000]
 (a) All the three vectors are parallel to one and the same plane
 (b) All the three vectors are linearly dependent
 (c) This system of equation has a non-trivial solution
 (d) All the three vectors are perpendicular to each other
40. Let \mathbf{a}, \mathbf{b} and \mathbf{c} be vectors with magnitudes $3, 4$ and 5 respectively and $\mathbf{a} + \mathbf{b} + \mathbf{c} = 0$, then the values of _____ $\mathbf{a} \cdot \mathbf{b} + \mathbf{b} \cdot \mathbf{c} + \mathbf{c} \cdot \mathbf{a}$ is _____ [IIT 1995; DCE 2001; AIEEE 2002; UPSEAT 2002; Kerala (Engg.) 2005]
 (a) 47 (b) 25
 (c) 50 (d) -25
41. If \mathbf{a} and \mathbf{b} are adjacent sides of a rhombus, then _____ [RPET 2001]
 (a) $\mathbf{a} \cdot \mathbf{b} = 0$ (b) $\mathbf{a} \times \mathbf{b} = 0$
 (c) $\mathbf{a} \cdot \mathbf{a} = \mathbf{b} \cdot \mathbf{b}$ (d) None of these
42. If \mathbf{x} and \mathbf{y} are two unit vectors and _____ is the angle between them, then _____ is equal to _____ [UPSEAT 2001]
 (a) 0 (b) _____
 (c) 1 (d) _____
43. If _____, then $\mathbf{a} =$ _____ [EAMCET 2002]
 (a) \mathbf{i} (b) \mathbf{k}
 (c) \mathbf{j} (d) $\mathbf{i} + \mathbf{j} + \mathbf{k}$
44. If $\mathbf{i}, \mathbf{j}, \mathbf{k}$ are unit vectors, then _____ [MP PET 2001]
 (a) $\mathbf{i} \cdot \mathbf{j} = 1$ (b) $\mathbf{i} \cdot \mathbf{i} = 1$
 (c) _____ (d) _____
45. If _____ then _____ is _____ [MP PET 2002]
 (a) Positive (b) Negative
 (c) Zero (d) None of these
46. _____ are three vectors, such that _____, then _____ is equal to _____ [AIEEE 2003]
 (a) 0 (b) -7
 (c) 7 (d) 1
47. A unit vector which is coplanar to vector _____ and perpendicular to _____ is _____



[IIT 1992; Kurukshetra CEE 2002]

- (a) (b)
- (c) (d)

48. If then a value of λ for which is perpendicular to is [Karnataka CET 2004]

- (a) (b)
- (c) (d)

49. and \mathbf{c} are three vectors with magnitude and such that is perpendicular to is perpendicular to and is perpendicular to It follows that is equal to

[UPSEAT 2004]

- (a) 9 (b) 6
- (c) 5 (d) 4

50. The angle between the vectors and is [MP PET 1990]

- (a) (b)
- (c) (d)

51. If the position vectors of the points A, B, C, D be and then the angle between the vectors and is

- (a) (b)
- (c) (d)

52. If θ be the angle between the unit vectors \mathbf{a} and \mathbf{b} , then will be a unit vector if

- (a) (b)
- (c) (d)

53. If the angle between \mathbf{a} and \mathbf{b} be , then the angle between $3\mathbf{a}$ and $-4\mathbf{b}$ will be

- (a) (b)
- (c) (d)

54. The angle between the vectors and is [BIT Ranchi 1991]

- (a) (b)

- (c) (d)

55. The position vector of vertices of a triangle ABC are and respectively, then [RPET 1988, 97]

- (a) (b)
- (c) (d)

56. The value of x for which the angle between the vectors is acute and the angle

between the vectors \mathbf{b} and the axis of ordinate is obtuse, are

- (a) 1, 2 (b) $-2, -3$
- (c) $x > 0$ (d) None of these

57. If \mathbf{a} and \mathbf{b} are unit vectors and is also a unit vector, then the angle between \mathbf{a} and \mathbf{b} is

[RPET 1991; MP PET 1995; Pb. CET 2001]

- (a) (b)
- (c) (d)

58. If θ be the angle between two vectors \mathbf{a} and \mathbf{b} , then if [MP PET 1995]

- (a) (b)
- (c) (d) None of these

59. If and then the angle between the vectors and is

[Karnataka CET 1994; Orissa JEE 2005]

- (a) (b)
- (c) (d)

60. The value of x for which the angle between the vectors and is acute and the angle

between \mathbf{b} and x -axis lies between and satisfy

[Kurukshetra CEE 1996]

- (a) (b)
- (c) only (d) only

61. The angle between the vectors and is [MP PET 1996]

- (a) (b)
- (c) (d)

62. If the angle between two vectors and is then the value of [MP PET 1997]

- (a) 2 (b) 4



- (c) -2 (d) 0
63. If three vectors \mathbf{a} , \mathbf{b} , \mathbf{c} satisfy _____ and _____ then the angle between \mathbf{a} and \mathbf{b} is _____
 [Kurukshetra CEE 1998; UPSEAT 2001; AIEEE 2002; MP PET 2002]
- (a) _____ (b) _____
 (c) _____ (d) _____
64. If \mathbf{a} , \mathbf{b} and \mathbf{c} are unit vectors such that _____ then the angle between \mathbf{a} and \mathbf{b} is _____
 [Roorkee Qualifying 1998; MP PET 1999; UPSEAT 2000; RPET 2002]
- (a) _____ (b) _____
 (c) _____ (d) _____
65. If the sum of two unit vectors is a unit vector, then the magnitude of their difference is _____
 [Kurukshetra CEE 1996; RPET 1996]
- (a) _____ (b) _____
 (c) _____ (d) 1
66. The angle between the vector _____ and _____ is _____
 [MNR 1990; UPSEAT 2000]
- (a) _____ (b) _____
 (c) _____ (d) 0
67. If _____ be the angle between the vectors _____ and _____, then _____
 [MP PET 2001, 03]
- (a) _____ (b) _____
 (c) _____ (d) _____
68. If \mathbf{a} and \mathbf{b} are two unit vectors such that _____ and _____ are perpendicular to each other, then the angle between \mathbf{a} and \mathbf{b} is _____
 [IIT Screening 2002]
- (a) _____ (b) _____
 (c) _____ (d) _____
69. Let \mathbf{a} and \mathbf{b} be two unit vectors inclined at an angle _____, then _____ is equal to _____
 [BIT Ranchi 1991; Karnataka CET 2000, 01; UPSEAT 2002]
- (a) _____ (b) _____
 (c) _____ (d) _____
70. The angle between the vectors $\mathbf{a} + \mathbf{b}$ and $\mathbf{a} - \mathbf{b}$, when _____ and _____ is _____
 [Karnataka CET 2003]
- (a) _____ (b) _____
 (c) _____ (d) _____
71. A vector of length 3 perpendicular to each of the vectors _____ and _____ is _____
- (a) _____ (b) _____
 (c) _____ (d) None of these
72. If _____ and _____ then the vectors \mathbf{a} and \mathbf{b} are _____
 [Roorkee 1986; MNR 1988; IIT Screening 1989; MP PET 1990, 97; RPET 1984, 90, 96, 99; KCET 1999]
- (a) Parallel to each other
 (b) Perpendicular to each other
 (c) Inclined at an angle of _____
 (d) Neither perpendicular nor parallel
73. The vector _____ is perpendicular to the vector _____ if _____
 [MP PET 1987]
- (a) 5 (b) -5
 (c) -3 (d) 3
74. If _____ and _____ then _____ is perpendicular to \mathbf{c} if _____
 [MNR 1979; MP PET 2002]
- (a) 2 (b) 4
 (c) 6 (d) 8
75. The vector _____ is perpendicular to _____ if _____
 [MNR 1983; MP PET 1988]
- (a) 0 (b) -1
 (c) -2 (d) -3
76. The vectors _____ and _____ are perpendicular, when _____
 [MNR 1982; MP PET 1988; MP PET 2002]
- (a) _____ (b) _____
 (c) _____ (d) None of these
77. A unit vector in the _____ plane which is perpendicular to _____ is _____
 [RPET 1991]
- (a) _____ (b) _____
 (c) _____ (d) None of these
78. If _____ where _____ are scalars and \mathbf{a} , \mathbf{b} , \mathbf{c} are mutually perpendicular vectors, then _____
- (a) _____ (b) _____
 (c) _____ (d) _____
79. The unit normal vector to the line joining _____ and _____ and pointing towards the origin is _____
 [MP PET 1989]



- (a) (b)
- (c) (d)
80. If the vectors \mathbf{a} and \mathbf{b} are perpendicular to each other, then a is given by [MP PET 1993]
 (a) 9 (b) 16
 (c) 25 (d) 36
81. The value of λ for which the vectors \mathbf{a} and \mathbf{b} are perpendicular, is [MP PET 1992]
 (a) None (b) -1
 (c) 1 (d) Any value
82. If the vectors \mathbf{a} and \mathbf{b} are perpendicular, then [RPET 1989]
 (a) (b)
 (c) (d)
83. If \mathbf{a} and \mathbf{b} and \mathbf{c} then value of λ will be [RPET 1995]
 (a) 2 (b) -1
 (c) -2 (d) 1
84. The vector \mathbf{a} is [IIT Screening 1994]
 (a) A unit vector
 (b) Makes an angle θ with the vector \mathbf{b}
 (c) Parallel to the vector \mathbf{b}
 (d) Perpendicular to the vector \mathbf{b}
85. If the vectors \mathbf{a} and \mathbf{b} are perpendicular to each other, then [MP PET 1996]
 (a) 6 (b) -6
 (c) 5 (d) -5
86. Which of the following is a true statement [Kurukshetra CEE 1996]
 (a) \mathbf{a} is coplanar with \mathbf{c}
 (b) \mathbf{a} is perpendicular to \mathbf{a}
 (c) \mathbf{a} is perpendicular to \mathbf{b}
 (d) \mathbf{a} is perpendicular to \mathbf{c}
87. If \mathbf{a} and \mathbf{b} are parallel, then λ is [RPET 1996]
 (a) 4 (b) 2
 (c) -2 (d) -4
88. If \mathbf{a} and \mathbf{b} are perpendicular vectors, then the value of a is [Karnataka CET 2001]
 (a) 5 (b) -5
 (c) 7 (d)
89. If \mathbf{a} and \mathbf{b} are at right angle, then
- (a) -6 (b) -8
 (c) -10 (d) -12
90. If the vectors \mathbf{a} and \mathbf{b} are perpendicular, then λ is [Kerala (Engg.) 2002]
 (a) -14 (b) 7
 (c) 14 (d) $1/7$
91. If \mathbf{a} and \mathbf{b} are two non-zero vectors, then the component of \mathbf{b} along \mathbf{a} is [MP PET 1991]
 (a) (b)
 (c) (d)
92. A vector of magnitude 14 lies in the xy -plane and makes an angle of θ with x -axis. The components of the vector in the direction of x -axis and y -axis are
 (a) (b)
 (c) (d)
93. If \mathbf{a} and \mathbf{b} then the component of \mathbf{a} along \mathbf{b} is [IIT Screening 1989; MNR 1983, 87; UPSEAT 2000]
 (a) (b)
 (c) (d)
94. Let \mathbf{a} and let \mathbf{b} and \mathbf{c} be component vectors of \mathbf{b} parallel and perpendicular to \mathbf{a} . If $\mathbf{a} \cdot \mathbf{b} = 10$, then [MP PET 1989]
 (a) (b)
 (c) (d) None of these
95. The component of \mathbf{a} along \mathbf{b} will be
 (a) (b)
 (c) (d) None of these
96. The projection of vector \mathbf{a} on the vector \mathbf{b} will be [RPET 1984, 90, 97, 99; Karnataka CET 2004]
 (a) (b)
 (c) (d)



97. If vector \vec{a} and vector \vec{b} then

[MP PET 1994, 99; Pb. CET 2000]

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$

(c) 3 (d) 7

98. The projection of \vec{a} along \vec{b} is [RPET 1995]

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$

(c) $\frac{1}{4}$ (d) $\frac{1}{5}$

99. If \vec{a} and \vec{b} then the projection of \vec{b} on \vec{a} is [Karnataka CET 2002]

(a) 3 (b) 4

(c) 5 (d) 6

100. The projection of the vector \vec{a} on the vector \vec{b} is [RPET 1990; MNR 1980; MP PET 2002;

UPSEAT 2002; Pb. CET 2004]

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$

(c) $\frac{1}{4}$ (d) $\frac{1}{5}$