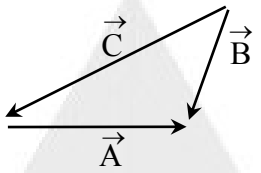
NEET PHYSICS

Topic: Vector

Q.1 **For the figure –**



(1) $\vec{A}+\vec{B}=\vec{C}$ **(2)** $\vec{B}+\vec{C}=\vec{A}$

(3) $\vec{C}+\vec{A}=\vec{B}$ **(4)** $\vec{A}+\vec{B}+\vec{C}$ **= 0**

Q.2 **Two forces of 4 dyne and 3 dyne act upon a body. The resultant force on the body can only be –**

(1) more than 3 dynes

(2) more than 4 dynes

(3) between 3 and 4 dynes

(4) between 1 and 7 dynes

Q.3 **A force of 6 kg and another of 8 kg can be applied together to produce the effect of a single force of-**

(1) 1kg (2) 11kg (3) 15 kg (4) 20 kg

Q.4 **Which of the sets given below may represent the magnitudes of three vectors adding to zero ?**

(1) 2, 4, 8 **(2) 4, 8, 16**

(3) 1, 2, 1 **(4) 0.5, 1, 2**

Q.5 **Two vectors have magnitudes 3 unit and 4 unit respectively. What should be the angle between them if the magnitude of the resultant is -**

(i) 1 unit **(ii) 5 unit** **(iii) 7 unit**

(1) 180º, 90º, 0º **(2) 80º, 70º, 0º**

(3) 90º, 170º, 50º **(4) None of these**

Q.6 **A blind person after walking 10 steps in one direction, each of length 80 cm, turns randomly to the left or to the right by 90º. After walking a total of 40 steps the maximum possible displacement of the person from his starting position could be -**

(1) 320 m **(2) 32 m**

(3) 16/ $\sqrt{2}$ m **(4) 16 $\sqrt{2}$ m**

Q.7 **If the angle between vector $\vec{a}$ and $\vec{b}$ is an acute angle, then the difference $\vec{a} - \vec{b}$ is -**

(1) the main diagonal of the parallelogram

(2) the minor diagonal of the parallelogram

(3) any of the above **(4) none of the above**

Q.8 **What is the resultant of three coplanar forces: 300 N at 0°, 400 N at 30º and 400 N at 150º ?**

(1) 500 N **(2) 700 N** **(3) 1100N** **(4) 300 N**

Q.9 **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 -**

(1) $\cos^{-1}$ (1/2) **(2) $\cos^{-1}$ (–1/2)**

(3) $\cos^{-1}$ (–1/4) **(4) $\cos^{-1}$ (1/4)**

Q.10 **If the magnitudes of the vectors $\vec{A}$, $\vec{B}$ and $\vec{C}$ are 6, 8, 10 units respectively and if $\vec{A} + \vec{B} = \vec{C}$, then the angle between $\vec{A}$ and $\vec{C}$ is -**

(1) $\pi/2$

(2) arc cos (0. 6)

(3) arc tan (0.75)

(4) $\pi/4$

Q.11 **Angle between ($\vec{P} + \vec{Q}$) and ($\vec{P} - \vec{Q}$) will be-**

(1) 0º only

(2) 90º only

(3) 180º only

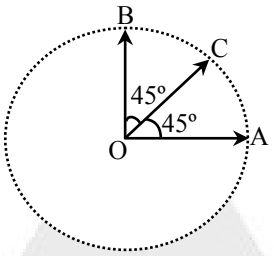
(4) between 0º and 180º (both the values inclusive)

Q.12 A particle is moving in a circle of radius r centre at O with constant speed v the change in velocity moving from A to B ($\angle AOB = 40º$) is -

(1) $2v \cos 40º$ **(2)** $2v \sin 40º$

(3) $2v \cos 20º$ **(4)** $2v \sin 20º$

Q.13 The three vectors $\vec{OA}$, $\vec{OB}$ and $\vec{OC}$ have the same magnitude R. Then the sum of these vectors have magnitude –



(1) R **(2)** $\sqrt{2}$ R **(3)** 3R **(4)** $(1+\sqrt{2})$R

Q.14 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 ?

(1) $18\hat{i} - 6\hat{j}$ **(2)** $32\hat{i} - 13\hat{j}$

(3) $-18\hat{i} + 6\hat{j}$ **(4)** $-25\hat{i} + 13\hat{j}$

Q.15 Two constant forces $\vec{F}_1 = 2\hat{i} - 3\hat{j} + 3\hat{k}$ (N) and $\vec{F}_2 = \hat{i} + \hat{j} - 2\hat{k}$ (N) act on a body and displace it from the position $\vec{r}_1 = \hat{i} + 2\hat{j} - 2\hat{k}$ (m) to the position $\vec{r}_2 = 7\hat{i} + 10\hat{j} + 5\hat{k}$ (m). What is the work done ?

(1) 9 Joule **(2)** 41 Joule

(3) –3 Joule **(4)** None of these

Q.16 Two vectors $\vec{A}$ and $\vec{B}$ lie in X-Y plane. The vector B is perpendicular to vector $\vec{A}$. If $\vec{A} = \hat{i} + \hat{j}$, then $\vec{B}$ may be -

(1) $\hat{i} - \hat{j}$ **(2)** $-\hat{i} + \hat{j}$

(3) $-2\hat{i} + 2\hat{j}$ **(4)** Any of the above

Q.17 **The two vectors $\vec{A} = 2\hat{i}+\hat{j}+3\hat{k}$ and**

$\vec{B} = 7\hat{i}-5\hat{j}-3\hat{k}$ **are -**

(1) parallel **(2) perpendicular**

(3) anti-parallel **(4) none of these**

Q.18 **Two vectors $\vec{P} = 2\hat{i}+b\hat{j}+2\hat{k}$ and $\vec{Q}=\hat{i}+\hat{j}+\hat{k}$**

will be perpendicular if -

(1) b = 0 **(2) b = 1**

(3) b = 2 **(4) b = – 4**

Q.19 **A vector perpendicular to $(4\hat{i}-3\hat{j})$ is –**

(1) $4\hat{i}+3\hat{j}$ **(2)** $7\hat{k}$

(3) $6\hat{i}$ **(4)** $3\hat{i}-4\hat{j}$

Q.20 **Angle that the vector $\vec{A}$ = 2 $\hat{i}$ + 3 $\hat{j}$ makes with y-axis is –**

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

(3) $\sin^{-1}$ 2/3 **(4) $\cos^{-1}$ 3/2**

Q.21 **A vector $\vec{A}$ points. vertically upward and, $\vec{B}$ points towards north. The vector product $\vec{A}\times\vec{B}$ is-**

(1) along west

(2) along east

(3) zero

(4) vertically downward

Q.22 **The linear velocity of a rotating body is given by $\vec{v}=\vec{\omega}\times\vec{r}$, where $\vec{\omega}$ is the angular velocity and $\vec{r}$ is the radius vector. The angular velocity of a body $\vec{\omega}$ = $\hat{i}-2\hat{j}+2\hat{k}$ and their radius vector $\vec{r}$ = 4 $\hat{j}$ – 3 $\hat{k}$, |v| is -**

(1) $\sqrt{29}$ **units** **(2) 31 units**

(3) $\sqrt{37}$ **units** **(4)** $\sqrt{41}$ **units**

Q.23 $0.4\hat{i} + 0.8\hat{j} + c\hat{k}$ **represents a unit vector, when c is -**

(1) 0.2 **(2)** $\sqrt{0.2}$

(3) $\sqrt{0.8}$ **(4) 0**

Q.24 **A vector is not changed if -**

(1) It is rotated through an arbitrary angle

(2) It is multiplied by an arbitrary scale

(3) It is cross multiplied by a unit vector

(4) It is a slide parallel to itself

Q.25 **The component of a vector is -**

(1) always less than its magnitude

(2) always greater than its magnitude

(3) always equal to its magnitude

(4) none of these

Q.26 **If** $\vec{A} = \vec{B} + \vec{C}$ **and the magnitudes** $\vec{A}, \vec{B}$ **and** $\vec{C}$ **are 5, 4 and 3 units, the angle between** $\vec{A}$ **and** $\vec{C}$ **is-**

(1) $\cos^{-1}\left(\frac{3}{5}\right)$ **(2)** $\cos^{-1}\left(\frac{4}{5}\right)$

(3) $\frac{\pi}{2}$ **(4)** $\sin^{-1}\left(\frac{3}{4}\right)$

Q.27 **The resultant of** $\vec{A}$ **and** $\vec{B}$ **makes an angle** α **with** $\vec{A}$ **and** β **with** $\vec{B}$**, then -**

(1) $\alpha < \beta$

(2) $\alpha < \beta$ **if A < B**

(3) $\alpha < \beta$ **if A > B**

(4) $\alpha < \beta$ **if A = B**

Q.28 **I started walking down a road to day-break facing the sun. After walking for some-time, I turned to my left, then I turned to the right once again. In which direction was I going then ?**

(1) East **(2) North-west**

(3) North-east **(4) South**

Q.29 **Minimum number of unequal forces whose vector sum can equal to zero is -**

(1) two **(2) three**

(3) four **(4) any**

Q.30 **How many minimum number of vectors in different planes can be added to give zero resultant ?**

(1) 2 **(2) 3**

(3) 4 **(4) 5**

ANSWER KEY

Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	3	4	2	3	1	4	2	1	3	2
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	4	4	4	3	1	4	2	4	3	2
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	1	1	2	4	1	1	3	1	2	3