AIPMT 2006

1. The vectors $\vec{A}$ and $\vec{B}$ are such that $|\vec{A}+\vec{B}|=|\vec{A}-\vec{B}|$. The angle between vectors $\vec{A}$ and $\vec{B}$ is -

(1) 90° (2) 60° (3) 75° (4) 45°

AIPMT 2007

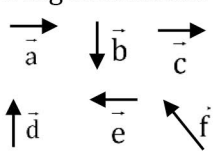
2. If $|\vec{A}\times\vec{B}| = \sqrt{3}\ \vec{A}.\vec{B}$, then the value of $|\vec{A}+\vec{B}|$ is :

(1) $\left(A^2+B^2+\frac{AB}{\sqrt{3}}\right)^{1/2}$ (2) A + B

(3) $(A^2+B^2+\sqrt{3}AB)^{1/2}$ (4) $(A^2+B^2+AB)^{1/2}$

AIPMT 2010

3. Six vectors, $\vec{a}$ through $\vec{f}$ have the magnitudes and directions indicated in the figure. Which of the following statements is true ?



(1) $\vec{b}+\vec{e}=\vec{f}$ (2) $\vec{b}+\vec{c}=\vec{f}$

(3) $\vec{d}+\vec{c}=\vec{f}$ (4) $\vec{d}+\vec{e}=\vec{f}$

Re-AIPMT 2015

4. If vectors $\vec{A}=\cos\omega t\hat{i}+\sin\omega t\hat{j}$ and $\vec{B}=\cos\frac{\omega t}{2}\hat{i}+\sin\frac{\omega t}{2}\hat{j}$ are functions of time, then the value of t at which they are orthogonal to each other is :

(1) t = 0 (2) $t=\frac{\pi}{4\omega}$

(3) $t=\frac{\pi}{2\omega}$ (4) $t=\frac{\pi}{\omega}$

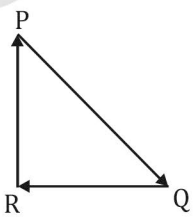
NEET-I 2016

5. If the magnitude of sum of two vectors is equal to the magnitude of difference of the two vectors, the angle between these vectors is :-

(1) 0° (2) 90° (3) 45° (4) 180°

NEET(UG) 2019

6. A particle moving with velocity $\vec{V}$ is acted by three forces shown by the vector triangle PQR. The velocity of the particle will :



(1) increase

(2) decrease

(3) remain constant

(4) change according to the smallest force $\overrightarrow{QR}$

RE-NEET(UG) 2022

7. If $\vec{F}=2\hat{i}+\hat{j}-\hat{k}$ and $\vec{r}=3\hat{i}+2\hat{j}-2\hat{k}$, then the scalar and vector products of $\vec{F}$ and $\vec{r}$ have the magnitudes respectively as :

(1) 5, $\sqrt{3}$ (2) 4, $\sqrt{5}$

(3) 10, $\sqrt{2}$ (4) 10, 2

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7
Answer	1	4	4	4	2	3	3

1. Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Current has magnitude as well as direction but still not considered as vector.

Reason (R) : Current do not follow vector algebra.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.

(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.

(3) **(A)** is true but **(R)** is false.

(4) **(A)** is false but **(R)** is true.

2. Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Definite integral of a function is defined as area under the curve.

Reason (R) : Definite integral of a function is always positive.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.

(2) Both **(A)** and **(R)** are true and **(R)** is NOT the correct explanation of **(A)**.

(3) **(A)** is true but **(R)** is false.

(4) **(A)** is false but **(R)** is true.

3. Two vectors $\vec{A}$ & $\vec{B}$ have equal magnitude equal to Z. If angle between $\vec{A}$ & $\vec{B}$ is 60° then match the following :

(A) $\left|\vec{A}+\vec{B}\right|$ (P) $\frac{\sqrt{3}}{2}Z^2$

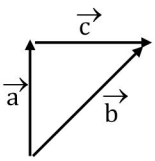
(B) $\left|\vec{A}-\vec{B}\right|$ (Q) Z

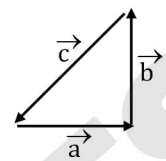
(C) $\vec{A}\cdot\vec{B}$ (R) $\sqrt{3}Z$

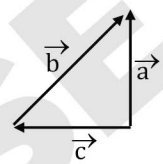
(D) $\left|\vec{A}\times\vec{B}\right|$ (S) None

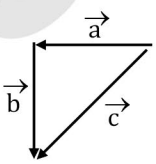
(1) (A)–(R), (B)–(S), (C)–(Q), (D)–(P)
(2) (A)–(R), (B)–(Q), (C)–(S), (D)–(P)
(3) (A)–(P), (B)–(Q), (C)–(R), (D)–(S)
(4) (A)–(Q), (B)–(P), (C)–(S), (D)–(P)

4. Match the following

(A) $\vec{a}+\vec{b}=\vec{c}$ (P) 

(B) $\vec{a}-\vec{c}=\vec{b}$ (Q) 

(C) $\vec{b}-\vec{a}=\vec{c}$ (R) 

(D) $\vec{a}+\vec{b}+\vec{c}=\vec{0}$ (S) 

(1) (A)–(S), (B)–(R), (C)–(P), (D)–(Q)
(2) (A)–(R), (B)–(S), (C)–(Q), (D)–(P)
(3) (A)–(P), (B)–(Q), (C)–(R), (D)–(S)
(4) (A)–(S), (B)–(R), (C)–(Q), (D)–(P)

5. Given below are two statements :

Statement I : Resultant of 2 forces of magnitude 4N and 5N can be 2N in magnitude.

Statement II : $\left||\vec{a}|-|\vec{b}|\right|\le|\vec{a}+\vec{b}|\le|\vec{a}|+|\vec{b}|$

In the light of the above statements, choose the most appropriate answer from the options given below :

(1) Both statement I and statement II are correct.

(2) Statement I is correct and statement II is incorrect.

(3) Statement I is incorrect and statement II is correct.

(4) Both statements I and statements II are incorrect.

6. Given below are two statements :

Statement I : Two null vector have same direction.

Statement II : $\vec{A}\times\vec{B}$ lies in the plane of $\vec{A}+\vec{B}$

In the light of the above statements, choose the most appropriate answer from the options given below :

(1) Both statement I and statement II are correct.

(2) Statement I is correct and statement II is incorrect.

(3) Statement I is incorrect and statement II is correct.

(4) Both statements I and statements II are incorrect.

7. Which of the following is correct :

(i) $\vec{A}\cdot\vec{B}$ is a vector quantity

(ii) $\vec{A}\times\vec{B}$ is perpendicular to plane of $\vec{A}+\vec{B}$

(iii) For two orthogonal vectors $\vec{A}\cdot\vec{B}=0$

(iv) If vectors are parallel or antiparallel, then $\vec{A}\times\vec{B}=\vec{0}$

(1) (i) only

(2) (i) & (ii)

(2) (iii) & (iv) only

(4) (ii), (iii) & (iv)

8. Which of the following is incorrect :

(i) In third quadrant sin θ of angle is positive

(ii) For an increasing function $\frac{dy}{dx}>0$

(iii) Definite integral of a function gives magnitude of area between given limits

(1) (i) only (2) (ii) only

(3) (i) & (iii) (4) (iii) only

9. Given below are two statements :

Statement I : For every small angle θ, we may use approximation $\sin\theta \approx \theta \approx \tan\theta$.

Statement II : For very small angle θ, the hypotenuse and the base become approximately of the same length.

(1) Statement-I is true, Statement-II is true; Statement-II is a correct explanation for Statement-I.

(2) Statement-I is true, Statement-II is true; Statement-II is not a correct explanation for Statement-I.

(3) Statement-I is true, Statement-II is false.

(4) Statement-I is false, Statement-II is true.

10. Suggest suitable match between function given in the first column and its description given in the second column.

Column-I	Column-II
(A) sin(390°)	(P) Positive
(B) sin(−30°)	(Q) Negative
(C) cos 120°	(R) Zero
(D) tan (−120°)	(S) Modulus is greater than one
	(T) Modulus is less than one

(1) A → PT, B → QT, C → QT, D → PS

(2) A → PT, B → QS, C → QT, D → PS

(3) A → QT, B → QS, C → PT, D → PS

(4) A → QS, B → PT, C → QT, D → PS

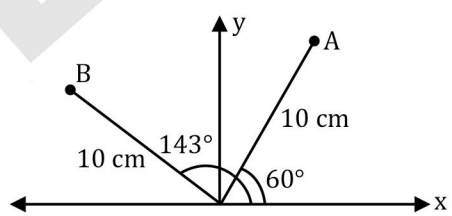
11. Refer the given figure and identify correct statement(s)

(A) Distance of A from x-axis is $5\sqrt{3}$ cm.

(B) Distance of B from x-axis is 6 cm.

(C) Distance of A from y-axis is 5 cm.

(D) Distance of B from y-axis is 8 cm.

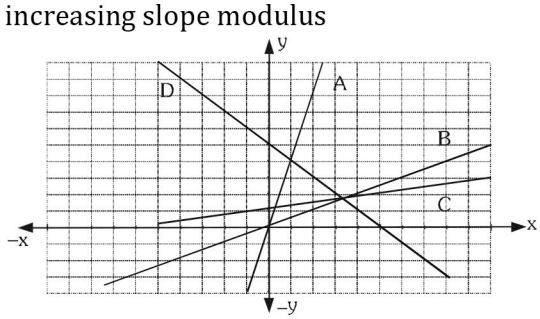


Options :-

(1) A, C (2) A, D

(3) A, B, C (4) A, B, C, D

12. In the following graph, several straight lines are shown. Arrange them in order of increasing slope modulus

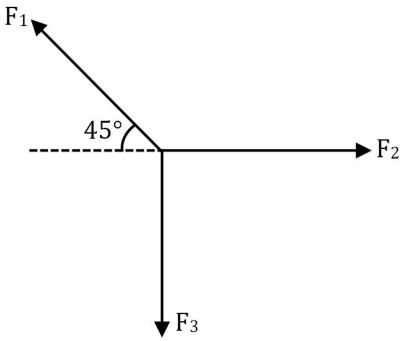


Options :-

(1) C, B, A, D (2) C, B, D, A

(3) A, D, B,C (4) D, A, B, C

13. Three forces $\vec{F}_1$, $\vec{F}_2$ and $\vec{F}_3$ are represented as shown. Each of them is of equal magnitude.



Column I (Combination)	Column II (Approximate Direction)
(A) $\vec{F}_1+\vec{F}_2+\vec{F}_3$	(P) ↖
(B) $\vec{F}_1-\vec{F}_2+\vec{F}_3$	(Q) ↘
(C) $\vec{F}_1-\vec{F}_2-\vec{F}_3$	(R) ↙
(D) $\vec{F}_2-\vec{F}_1-\vec{F}_3$	(S) ↗

Options :-

(1) A → R, B → Q, C → P, D → S
(2) A → Q, B → P, C → R, D → S
(3) A → Q, B → R, C → P, D → S
(4) A → S, B → P, C → R, D → Q

14. Which of the following statement is/are true ?

(a) Two vectors of unequal magnitude can add up to zero.
(b) Three vectors of unequal magnitude can add up to zero, if they lie in a plane.
(c) Three vectors of unequal magnitude can added upto zero, if they do not lie in same plane.

Options :-

(1) Only a (2) a, b and c
(3) only b (4) only c

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Answer	1	3	2	1	1	4	4	3	1	1	4	2	3	3