AAFAQ ACADEMY – KASUR

Paper: Physics   **Chapter (2)**   **Class: F.Sc. Part – I**

VECTORS AND EQUILIBRIUM

Name: _____ Roll No: (in words) _____

OBJECTIVE TYPE

Total Marks: 12   **Paper Code: _____**   **Total Time: 10 Minutes**

NOTE: Write your **Roll No.** in space provided. Using lead pencil will result in loss of marks.

Q.No.1: You have four choices for each objective type question as A,B,C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Sr. No.	QUESTION	A	B	C	D
1.	If $\left|\bar{a}+\bar{b}\right| = \left|\bar{a}-\bar{b}\right|$ then angle between $\bar{a}$ and $\bar{b}$	90°	0°	180°	45°
2.	If the line of action of force passes through axis of rotation of origin then its torque is	Maximum	Minimum	Zero	None of these
3.	The magnitude of the vector $\frac{2}{3}\hat{i} - \frac{1}{3}\hat{j} + \frac{2}{3}\hat{k}$ is	Zero	One	Three	$\frac{1}{9}$
4.	The resultant of two forces 30 N and 40 N acting at an angle of 90^0 with each other is	30 N	40 N	50 N	70 N
5.	A single vector which has same effect as all the original vectors taken together is called	Unit vector	Equal vector	Resultant vector	Null vector
6.	The resultant magnitude of 6 N force acting at right angle to a 8N force is	2 N	14 N	8 N	10 N
7.	The magnitude of vector product of two non zero vectors $\bar{A}$ and $\bar{B}$ making an angle θ with each other, is	$AB\sin\theta\hat{n}$	$AB\sin\theta$	$AB\cos\theta$	AB
8.	The minimum number of unequal forces whose vector sum is zero must be	1	2	3	4
9.	Reverse process of vector Addition is called	subtraction of vector	Resolution of vector	obtaining unit vector	making a vector negative
10.	The unit vector along y-axis is	$\hat{i}$	$\hat{j}$	$\hat{k}$	None of these

SUBJECTIVE TYPE

Total Marks: 29   **Time Allowed: 0 Hours 50 Minutes**

SECTION – I (SHORT QUESTIONS)

2. Attempt any FIVE questions.   **(5×2=10)Marks**

   i. Suppose the sides of a closed polygon represent vector arranged heat to tail. What is the sum of these vectors?

   ii. Can the magnitude of a vector have a negative value?

   iii. What do you understand by positive and negative torques?

   iv. If all the components of the vectors, , A_1 and A_2 were reversed, how would this alter $\vec{A_1} \times \vec{A_2}$?

   v. Under what circumstances, would a vector have components that are equal in magnitude?

   vi. Define the terms unit vector and position vector.

   vii. Show that $\vec{A} + \vec{B} = \vec{B} + \vec{A}$.

   viii. What is the unit vector in the direction of vector $\vec{A} = 4\hat{i} + 3\hat{j}$?

SECTION – II (ESSAY TYPE) Attempt given question

   3. Do as directed...

   i. Define cross product of two vectors. Prove that cross product of two vectors is non-commutative. Also write its any two characteristics. (5)

   ii. A certain corner of a room is selected as the origin of a rectangular coordinate system. If an insect is sitting on an adjacent wall at a point having coordinates (2,1), where the units are in metres, what is the distance of the insect from this corner of the room? (3)