



# SMART TEST SERIES

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|          |              |          |                              |
|----------|--------------|----------|------------------------------|
| Name:    |              | Subject: | Physics-11                   |
| Roll # : |              | Unit(s): | 2,                           |
| Class:   | Inter Part-I | Test:    | Type 2 - SQs Test - Marks=40 |
| Date:    |              | Time:    |                              |

## SHORT QUESTIONS TEST

### 1- Write short answers to any 7 questions: (7x2=14)

- (i) Define the terms unit vector and position vector.
- (ii) How a vector can be determined from its rectangular components?
- (iii) If a vector lies in  $x - y$  plane. Is it possible, one of its rectangular components is zero? Explain.
- (iv) Vector  $A$  lies in  $xy$  plane. For what orientations will both of its rectangular components be negative and for what orientations, its rectangular components be positive.
- (v) How a vector is subtracted from another vector? Explain using digram.
- (vi) Find unit vectors in the direction of vector  $\vec{A}$ .  $\vec{A} = 8\hat{i} + 4\hat{j}$ .
- (vii) If  $\vec{A} = -4\hat{i} - 4\hat{j}$ , what is the orientation of  $\vec{A}$ ?
- (viii) Name three conditions that could make  $\vec{A} \cdot \vec{B} = 0$ .
- (ix) What do you know about Right Hand Rule? Also state it.
- (x) Can a body rotate about its centre of gravity under the action of its weight?

### 2- Write short answers to any 7 questions: (7x2=14)

- (i) Show the sum and difference of two perpendicular vectors of equal lengths are also perpendicular and of the same length.
- (ii) If one of the rectangular components of a vector is not zero, can its magnitude be zero? Explain.
- (iii) Explain rectangular coordinate system.
- (iv) Find unit vectors in the direction of vector  $\vec{A}$ .  $\vec{A} = 8\hat{i} - 4\hat{j}$ .
- (v) How does the direction of a vector specified in three dimensions? Explain with diagram.
- (vi) If a vector lies in  $x - y$  plane. Is it possible, one of its rectangular components is zero? Explain.
- (vii) You are falling off the edge. What should you do to avoid falling?
- (viii) Write two examples of vector product.
- (ix)  $\vec{A}$  and  $\vec{B}$  are two vectors  $\vec{A} = 2\hat{i} + 5\hat{j}$ ,  $\vec{B} = 3\hat{i} + 7\hat{k}$ . Find  $\vec{A} \times \vec{B}$
- (x) Show that:  $\hat{i} \cdot \hat{j} = \hat{j} \cdot \hat{k} = \hat{k} \cdot \hat{i} = 0$ .

### 3- Write short answers to any 6 questions: (6x2=12)

- (i) Define the multiplication of a vector by a scalar.
- (ii) Why do you keep your legs far apart when you have to stand in the aisle of a bumpy riding bus?
- (iii) Under what circumstances would a vector have components that are equal in magnitude?
- (iv) Write down the steps for addition of vectors by rectangular component method.
- (v) What is the orientation of three vectors to get their vector sum equal to zero magnitude?
- (vi) Suppose the sides of a closed polygon represent vectors arranged head to tail. What is the sum of these vectors?
- (vii) Determine the direction of  $\vec{A} = -3\hat{i} - 8\hat{j}$  with positive  $x$ -axis.
- (viii) Define torque. Write its units and dimensions.
- (ix) Give two factors on which turning effect depends.