

# KCP SIDDHARTHA ADARSH RESIDENTIAL PUBLIC SCHOOL

Kanuru, Vijayawada – 520 007

## UNIT TEST - 1

Class : XI  
Sub : Physics

Marks : 30  
Time : 1 ½ Hr

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### General Instructions:

1. Answer all the questions.
  2. Questions 1 to 5 carry 1 mark each, questions 6 to 8 carry 2 marks each, questions 9 to 11 carry 3 marks each, questions 12 to 14 carry 5 marks each.
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1. When does a cyclist appear to be stationary with respect to another moving cyclist?
2. Can the speed of a body be negative?
3. What is the angle between the direction of velocity and acceleration at the highest point of a projectile path?
4. A body is projected with speed  $u$  at an angle  $\theta$  to the horizontal to have maximum range. What is the velocity at the highest point?
5. What does the slope of velocity-time graph of a body represent?
6. If the displacement of a body is zero, is the distance covered by it necessary to be zero? Comment.
7. The resultant of two equal forces acting at right angles to each other is 1414N. Find the magnitude of each force?
8. In which of the following examples of motion, can the body be considered approximately a point object:
  - i) A railway carriage moving without jerks between two stations.
  - ii) A monkey sitting on the top of a man cycling smoothly on a circular track.
  - iii) A spinning cricket ball that turns sharply on hitting the ground.
9. What is relative velocity? Derive the equation for the relative velocity and draw the graphs for it?
10. Explain resolution of vectors by analytical method?
11. A ball is thrown at an angle  $30^\circ$  with an initial velocity of 20 m/s. Find its (a) time of flight (b) maximum height (c) horizontal range.

### Answer any two questions:

12. What is projectile. Show that the path of a projectile is parabola? Derive expressions for (a) time of ascent (b) Range.
13. What is kinematics? Derive the following equations of motion for uniformly accelerated motion from velocity – time graph:

$$(a) v = u + at \quad (b) s = ut + \frac{1}{2}at^2 \quad (c) v^2 - u^2 = 2as$$

14. What is uniform circular motion? Derive an expression for the centripetal acceleration of a particle moving with uniform speed  $v$  along a circular path of radius  $r$ .