1. What is the angle of projection required in order to have maximum ‘horizontal range’?
2. What are the conditions for the addition of 2 vectors?
3. Can multiple vectors of the same magnitude be added to give resultant as zero?
4. Define ‘Scalar Product’ and ‘Vector Product’ and highlight key differences between them.
5. If a storm is blowing in the horizontal direction in support of the object, with acceleration ‘a’, then what changes will there be in its Range and Maximum Height?
6. A man on a moving truck throws a stone directly above him. Can he catch the stone? What should be the conditions for him to be able to catch the stone after throwing it??
7. What is the maximum velocity with which a vehicle can turn on a circular turn on a road?? (Given- μ is the friction coefficient).
8. A passenger wants to go from the station to a hotel located 10 km away on a straight road from the station. But the cab man takes him along a circuitous path 23 km long and reaches the hotel in 28 min. What is (a) the average speed of the taxi, (b) the magnitude of average velocity? Are the two equal?
9. A woman rides a bicycle with a speed of 10 m s-1 in the north to south direction while rain is falling vertically with a speed of 30 m s-1. In which direction she should hold her umbrella ?
10. A cricketer can throw a ball to a maximum horizontal distance of 100 m. How much high above the ground can the cricketer throw the same ball?
11. A stone tied to the end of a string 80 cm long is whirled in a horizontal circle with a constant speed. If the stone makes 14 revolutions in 25 s, what is the magnitude and direction of acceleration of the stone?
12. A cyclist is riding with a speed of 27 km/h. As he approaches a circular turn on the road of radius 80 m, he applies brakes and reduces his speed at the constant rate of 0.50 m/s every second. What is the magnitude and direction of the net acceleration of the cyclist on the circular turn?