MOTION IN A PLANE

***General Instructions*:** Answer all the questions. If you are unable to answer any question, go through the page number that is given against that particular question in the text book. You can find the answer**.**

Test Paper-III

MAX MARKS: 20 **TIME: 60Mts**

1	Derive the expression for finding the following in case of a projectile. a. Time of maximum height b. Maximum height of a Projectile c. Horizontal Range of a Projectile.	P78	5
2	A hiker stands on the edge of a cliff 490m above the ground and throws a stone horizontally with an initial speed of 15 ms^{-1}. Neglecting air resistance, find the time taken by the stone to reach the ground, and the speed with which it hits the ground.(Take g= 9.8 m s^{-2})	P78	3
3	A cricket ball is thrown at a speed of 28 m s^{-1}in a direction 30^{o}above the horizontal. Calculate (a) the maximum height. (b) the time taken by the ball to return to the same level, and (c) the distance from the thrower to the point where the ball returns to the same level.	P79	3
4	Discuss the effect of air resistance on the motion of a projectile.	P79	2
5	What is meant by centripetal acceleration? Derive an expression for the same.	P81	3
6	An insect trapped in a circular grove of radius 12cm moves along the grove steadily and completes 7 revolutions in 100s. (a) What is the angular speed, and the linear speed of the motion? (b) Is the acceleration vector a constant vector? What is its magnitude?	P81	2
7	Give the dimensional formula and SI unit of the following quantities. a. Angular speed b. Centripetal acceleration c. Horizontal range of a projectile d. Time of flight of a projectile	P84	2