PHYSICS TEST (Class XI)

Motion in straight line and motion in plane

TIME- 1hr **M.M. :30**

1. A body is projected horizontally from the top of a cliff with a velocity of 9:8 ms^{-1} What time elapses before the horizontal and vertical velocities become equal ? Given g = 9.8 ms^{-2} [3]

2. A projectile is fired horizontally with a velocity of 98 ms^{-1} from the top of the hill 490 metre high. Find [3]

   (i) The velocity with which the projectile strikes the ground.

   (ii) Time taken to reach the ground and

   (iii) The distance of the target from the hill

3. Calculate the maximum horizontal distance travelled by a ball thrown with velocity of 40 ms^{-1} without hitting the ceiling of an auditorium of height 25 m [3]

4. A bullet fired at an angle of 15º with the horizontal hits the ground 3 km away. Can we hit a target at a distance of 7 km by adjusting its angle of projection? [3]

5. Find the equation of trajectory of a projectile thrown with a velocity *u* making a angle θ with the horizontal [3]

6. Prove that the range of a projectile is equal for complimentary angles of projection. [3]

7. A car travels a distance S on a straight road in two hours and then returns to the starting point in the next three hours. Its average velocity is? [3]

8. A car accelerates from rest at constant rate of 2 ms^{-2} for some time. Then it retards at constant rate of 4 ms^{-2} and comes to rest. What is the maximum speed attained by the car, if it remains in motion for 3 seconds? [3]

9. The driver of the train moving at 20 ms^{-1} sights another train moving at 4 ms^{-1} on the same track and in the same direction. He immediately applies brakes and his train begins to retard at 1 ms^{-1}. What should be the minimum distance between the trains for no collision? [3]

10. A ball thrown upwards, returns to the thrower after 4 seconds. Given that g = 10 ms^{-2} , with after 4 seconds. Given that g = 10 ms^{-2} , with what velocity does it return to the thrower? [3]