**Chapter wise Practice Question/Maths**

**1**. A cricket player kicks a ball at an angle of 420 from the horizontal with an initial speed of 25 m/s. Assume that the ball moves in a vertical plane

a) Find the time t1 at which the ball reaches the highest point of its trajectory.

b) How high does the ball go?

c) What is the horizontal range of the ball and how long is it in the air?

d) What is the velocity of the ball as it strikes ground?

**2.**In a contest to drop a package on a target, one contest’s plane is flying at a constant horizontal velocity of 155 Km/h at an elevation of 225 m toward a point directly above the target. At what angle of sight $Φ$should the package be released to strike the target?

4. A rescue plane flies at 123 miles/hr and constant height h=1640 ft. toward a point directly over a victim, where a rescue capsule is to land. What should be the angle of the pilot’s line of sight $Φ$to the victim when the capsule release is made? (Take g= 32 ft/s2)

5. An object throw from one roof to another roof. The velocity of the object was 15 m/s and throwing angle was 25 degree. How long time the object will take to reach from one roof to other roof?

6. A particle throw to the free space to make an angle of 40o at an initial speed of 20 m/s. Find the position of the particle after 1.2 sec of its release.

7. An 60 kg box is pushed by 600 N forces with an angle of 30o along to the horizontal line. The box gained velocity 6 m/s starting from rest at 4 seconds. Find the friction coefficient of the box.

8. A 50 kg box is pushed by 600 N forces with an angle of 45o along to the horizontal line. If the sliding friction coefficient of the box is 0.4, find the acceleration of the box.

9. An 1850-kg car is accelerating at a rate of 2**.**4m**/**s2 to the right along a straight and horizontal road where it experiences an overall frictional force of 1500N**.**  What is its engine force**?**

**10.** A block of mass m = 10.5kg is to be pushed a distance of s = 5.25 m along an incline plane that it is raised a distance of height = 3.5 m. As summing frictionless surfaces, calculate how much work you would do on the block if you applied a force parallel to the incline to push the block up at constant speed.

10. A block of 10 kg is moving on a horizontal frictionless table at a constant speed of 5 m/s. A spring is used to stop the block whose spring constant 400 n/m. How much the spring will elongated?

11. A solid wheel is moving on an axis, whose radius is 15 cm and height is 2.2cm. The density of the material of the wheel is 7.2gm/cc. Find the moment of inertia of the wheel.

12. A rod of length is 62 cm of mass 0.25kg is moving from an axis just exact from one end of the rod. Find the moment of inertia of the rod.

Question:

1. Show that the throwing object take the same time for maximum height and its come back.

Or, The time for travel the maximum height is half of the time for maximum distance for a throwing object.

Or, The double of the time for a throwing object is for maximum distance than the time of maximum height.

1. The mathematical equation is same for moment of inertia of a thin circular disc or for cylindrical body.

Or, There have no change of moment of inertia for thick and thin circular object.

1. Show that the moment of inertia of a rod changes when change the axis of rotation.

Or, The change of axis of rotation the value of moment of inertia changes for uniform rod, explain.