

PHYSICS REVISION ASSIGNMENT I

CLASS XI

CHAPTER- SYSTEM OF PARTICLES AND ROTATIONAL MOTION

M.M:15

Q1. Find the centre of mass of three particles at the vertices of an equilateral triangle. The masses of the particles are 100g, 150g, and 200g respectively. Each side of the equilateral triangle is 0.5 m long.

Q2. Discuss motion of Centre of Mass.

Q3. Obtain relation between Torque and Angular momentum for:

- (i) A particle
- (ii) System of particles

Q4. Define moment of inertia. On What factors does it depend?

Q5. A child sits stationary at one end of a long trolley moving uniformly with speed v on a smooth horizontal floor. If the child gets up and runs about on the trolley in any manner, then what is the effect of the speed of the centre of mass of the (trolley + child) system?

Q6. State the law of conservation of angular momentum. Give reasons for the following:

1. Planetary motion
2. A man carrying heavy weights in his hands and standing on a rotating turn-table can change the angular speed of the turn-table.
3. A diver jumping from a spring board exhibits summersaults in air before touching the water surface.
4. An ice-skater or a ballet dancer can increase her angular velocity by folding her arms and bringing the stretched leg close to the other leg.
5. The speed of the inner layers of the whirlwind in a tornado is alarmingly high.

Q7. Answer the following:

1. Define Rigid body.
2. What do you mean by Equilibrium of Rigid bodies.
3. Write conditions and example for total mechanical equilibrium and partial equilibrium of rigid bodies.

Q8. Define and Differentiate, Centre of mass and Centre of Gravity.

NOTE: DO INTEXT SOLVED QUESTIONS OF NCERT