National Institute of Open Schooling
Senior Secondary Course: Physics
Lesson 7: Motion of Rigid Body
Worksheet -7

1. In general, when extended bodies interact with each other and the distance between them is very much as compared to their sizes, which can be ignored and they may be treated as point masses. Observe your surroundings and give examples of such cases where the sizes of the bodies are not important?

2. Observe your surroundings and give examples of Rigid Bodies. Explain why these bodies are known as rigid bodies?

3. Enlist any five rigid bodies from your surroundings. Is every rigid body has a Center of Mass (CM). If yes then find CM of these rigid bodies. Is CM always lies at the centre or it may be outside the body? What can be the reason for the CM not being at the centre?

4. Can the body perform both translational motion and rotational motion simultaneously? Observe your surroundings and enlist bodies having translational motion, rotational motion and both translation and rotational motion. Write the condition for which a body can't have transactional motion; it can have only rotational motion.

5. Describe the expression of a moment of inertia for rigid body.

6. Why does a solid sphere have smaller moment of inertia than a hollow cylinder having same mass and radius, about an axis passing through their axes of symmetry?

7. There are two theorems which connect moments of inertia about two axes; one of which is passing through the CM of the body that is theorem of parallel axes and another one is theorem of perpendicular axes. Explain both theorems with their applications.

8. Measure dimensions of your room door and note it down. Release the door by exerting a force, let 5N at its edge (away from the hinges). Compute the torque produced which causes the door to open.

9. If there is no net torque acting on the body it means that there is no change in angular momentum, i.e. the angular momentum is constant. Name and explain the principle.

10. What will be the angular momentum of a thin hoop of radius 2 m and mass 1 kg that is rotating at a velocity of 4 rad/s?