



INDIAN SCHOOL NIZWA - WORKSHEET

PHYSICS
CH: 7 SYSTEM OF
PARTICLES AND RIGID
BODY

Name: _____

Date: _____

Class: XI Sec: A

1. Define centre of mass of a system.
2. On what factors, does the position of centre of mass of a rigid body depend?
3. Is it necessary that the centre of mass of a body should always lie inside the body?
4. Where does the centre of mass of a two particle system lie, if one particle is more massive than the other?
5. What is a rigid body?
6. Name the rotational analogue of force. On what factors does it depend?
7. What is the dimensional formula of torque?
8. Under what condition is torque zero?
9. Why a force is applied at right angles to the heavy door at the outer edge while closing or opening it?
10. Why are we not able to rotate a wheel by pulling or pushing along its radius?
11. If the angular momentum is conserved in a system whose moment of inertia is decreased, will its rotational kinetic energy be conserved?
12. Find the torque of a force $7\mathbf{i} - 3\mathbf{j} - 5\mathbf{k}$ about the origin which acts on a particle whose position vector is $\mathbf{i} + \mathbf{j} - \mathbf{k}$?



INDIAN SCHOOL NIZWA - WORKSHEET

13. An electron of mass 9×10^{-31} kg revolves in a circle of radius 0.53\AA around the nucleus of hydrogen with a velocity of 2.2×10^6 m/s. Show that its angular momentum is equal to $h/2\pi$, where h is Planck's constant of value 6.6×10^{-34} Js.

14. Three mass points m_1 , m_2 and m_3 are located at the vertices of an equilateral triangle of length a . What is the moment of inertia of the system about an axis along the altitude of the triangle passing through m_1 ?

15. A body whose moment of inertia is 3kgm^2 , is at rest. It is rotated for 20s with a moment of force 6Nm. Find the angular displacement of the body. Also calculate the work done.