# Expected Questions from Rotational Motion Discussion

1. Two bodies of mass M & m [M>m] are joined by a string, then center of mass lies
   a. Towards M
   b. Between M & m
   c. Towards m
   d. Both 'a' and 'b'
2. The center of mass is independent of
   a. Position vector
   b. Relative separation of distance
   c. Masses of particle
   d. Force of the particle
3. If a gymnast on a rotating stool with his arms outstretched suddenly lower his arms:
   a. The angular velocity decreases
   b. The moment if inertia decreases
   c. The angular velocity remains constant
   d. The angular momentum increases
4. If no internal force is applied in a body the velocity of the center of mass is :
   a. Zero
   b. Increases
   c. Decreases
   d. Remains constant
5. The product of moment of inertia 7 angular acceleration gives
   a. Linear momentum
   b. Angular momentum
   c. Torque
   d. Force
6. Angular momentum of a body is defined as the product of:
   a. Mass and angular velocity
   b. Linear velocity and angular velocity
   c. Centripetal force and radius
   d. Moment of inertia and angular velocity
7. The moment of momentum is called
   a. Couple
   b. Liquid
   c. Impulse
   d. Angular momentum
8. A ring, a disc, solid sphere, hollow sphere are dropped from the same inclined plane of same height then which one of the following reaches the ground first
   a. Ring
   b. Disc
   c. Solid sphere
   d. Hallow sphere
9. The moment of inertia of a body of mass M about a given axis is I. What is the radius of gyration?
   a. 1/M
   b. 1M
   c. $\sqrt{1}/M$
   d. $\sqrt{1}M$
10. The torque due to gravitational force on a body about its center of mass is
    a. Infinite
    b. Finite
    c. Zero
    d. Cannot measured
11. Two-point masses of 1 kg and 2 kg separated by 0.5cm constitute a system. The distance of the center of mass of system from 1kg mass is
    a. 0.15 cm
    b. 0.25 cm
    c. 0.33 cm
    d. 0.4 cm
12. An inclined plane makes an angle of 30° with horizontal. A solid cylinder rolling down this inclined plan from rest without slipping has linear acceleration equal to
    a. $\frac{g}{3}$
    b. $\frac{g}{2}$
    c. $\frac{2g}{3}$
    d. $\frac{g}{4}$
13. A rest projectile suddenly explodes into two fragments then the direction of center of mass is
    a. Parabolic
    b. St. line
    c. Hyperbolic
    d. Rest

14. A body is moving with moment of inertia is 400kg $m^2$ is rotating with angular velocity 20 rad/s. Calculate the torque of the body
    a. 2000 N/m
    b. 4000 N/m
    c. 8000 N/m
    d. 16000 N/m
15. What happens to moment of inertia when polar ice melts?
    a. Increases
    b. Decreases
    c. Remains constant
    d. None of these
16. Ice skaters use the principle of _____for spinning.
    a. Moment of inertia
    b. Angular momentum
    c. Torque
    d. Radius of gyration
17. A cylinder is rotated in inclined plane, find it acceleration.
    a. gsin$\theta$
    b. $\frac{2}{3}gsin\theta$
    c. $\frac{1}{2}gsin\theta$
    d. $\frac{3}{2}gsin\theta$
18. A person standing on a rotating platform has his hands out stretches suddenly lowers his arms then angular momentum of platform:
    a. Increases
    b. Decreases
    c. Remains constant
    d. Becomes zero
19. The spokes are used in bicycle wheel to
    a. Increase frictional force
    b. Decrease frictional force
    c. Increase moment of inertia
    d. Increase angular momentum
20. Three identical rods each of mass 'm' and length 'l' are joined to form a triangle. Moment of inertia about its base is
    a. $\frac{ml^2}{3}$
    b. $\frac{2ml^2}{3}$
    c. $\frac{3ml^2}{4}$
    d. $ml^2$