



Class 11 Physics | System Of Particles And Rotational Motion

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Masses 2 kg and 3 kg are at $x=0$ and $x=10$ m. Centre of mass is at:

A. 4 m B. 5 m C. 6 m D. 8 m

2. With zero net external force, the centre of mass has:

A. Constant velocity
B. Circular motion necessarily
C. Constant nonzero acceleration
D. Zero velocity necessarily

3. A 10 N force acts perpendicular to a 0.3 m lever arm. Torque is:

A. 3 N m B. 10.3 N m C. 0.03 N m D. 30 N m

4. The SI unit of angular momentum is:

A. kg m/s B. J/s C. N/m D. kg m²/s

5. A rotating body has $I=2$ kg m² and $\omega=3$ rad/s. Kinetic energy is:

A. 18 J B. 3 J C. 9 J D. 6 J

6. A torque of 12 N m acts on $I=4$ kg m². Angular acceleration is:

A. 8 rad/s² B. 48 rad/s²
C. 0.33 rad/s² D. 3 rad/s²

7. A uniform ring about its central axis perpendicular to its plane has I equal to:

A. $MR^2/4$ B. MR^2 C. $2MR^2/5$ D. $MR^2/2$

8. A uniform disc about its central axis perpendicular to its plane has I equal to:

A. $2MR^2$ B. $MR^2/2$ C. MR^2 D. $MR^2/12$

9. A skater reduces moment of inertia to half with no external torque. Angular speed:

A. Doubles B. Remains unchanged
C. Halves D. Quadruples

10. Angular momentum is conserved when net external:

A. Energy is zero B. Force is nonzero
C. Torque is zero D. Power is constant

11. A body has $I=0.18$ kg m² and mass 2 kg. Radius of gyration is:

A. 0.09 m B. 0.36 m C. 0.3 m D. 0.6 m

12. A force acts along a line through the pivot. Its torque about the pivot is:

A. Maximum
B. Zero
C. Equal to force
D. Equal to angular momentum

13. For equilibrium of a rigid body, which must vanish?

A. Only net torque
B. Net force and net torque
C. Only net force
D. All individual forces

14. A wheel starts from rest at constant $\alpha=2$ rad/s². Angle turned in 3 s is:

A. 18 rad B. 3 rad C. 6 rad D. 9 rad

15. A particle has $r=2i$ m and $p=3j$ kg m/s. Angular momentum is:

A. 6k kg m²/s B. 0 C. -6k kg m²/s D. 5k kg m²/s

ANSWER KEY — check after completing all 15 questions

1.C 2.A 3.A 4.D 5.C 6.D 7.B 8.B 9.A 10.C 11.C 12.B 13.B 14.D 15.A

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper