

Model Question Paper 3
Dynamics of Rotational Motion 3

11th Standard

Physics

Reg.No. :

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Answer all the Questions

Time : 00:45:00 Hrs

Total Marks : 35

5 x 1 = 5

Part A

- 1) Angular momentum is the vector product of ____
(a) linear momentum and radius vector (b) moment of inertia and angular velocity (c) linear momentum and angular velocity (d) linear velocity and radius vector
- 2) The rate of change of angular momentum is equal to ____
(a) force (b) angular acceleration (c) torque (d) moment of inertia
- 3) Angular momentum of the body is conserved ____
(a) always (b) never (c) in the absence of external torque (d) in the presence of external torque
- 4) A man is sitting on a rotating stool with his arms outstretched. Suddenly he folds his arm. The angular velocity ____
(a) decreases (b) increases (c) becomes zero (d) remains constant
- 5) An athlete diving off a high springboard can perform a variety of exercises in the air before entering the water below. Which one of the following parameters will remain constant during the fall. The athlete's ____
(a) linear momentum (b) moment of inertia (c) kinetic energy (d) angular momentum

Part B

3 x 2 = 6

- 6) Derive the equations of rotational motion.
- 7) Explain the physical significance of moment of inertia.
- 8) What is meant by centre of mass of the body?

Part C

3 x 3 = 9

- 9) What is meant by centre of gravity of the body?
- 10) What is radius of gyration? Give its unit.
- 11) Define angular acceleration.

Part D

3 x 5 = 15

- 12) Obtain the 'x' and 'y' co-ordinate of the centre of mass of a body consisting of n particles.
- 13) Obtain an expression for radius of gyration and hence define radius of gyration.
- 14) State and prove conservation of angular momentum.
