

Model Question Paper 2
Dynamics of Rotational Motion 2

11th Standard

Physics

Reg.No. :

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Answer all the Questions

Time : 00:30:00 Hrs

Total Marks : 25

Part A

3 x 1 = 3

- 1) The moment of inertia of a disc having mass M and radius R, about an axis passing through its centre and perpendicular to its plane is___
(a) $\frac{1}{2}MR^2$ (b) MR^2 (c) $\frac{1}{4}MR^2$ (d) $\frac{5}{4}MR^2$
- 2) 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
- 3) The rate of change of angular momentum is equal to ____
(a) force (b) angular acceleration (c) torque (d) moment of inertia

Part B

3 x 2 = 6

- 4) Show that the moment of inertia of a rigid body is twice the kinetic energy of rotation.
- 5) State and prove parallel axes theorem and perpendicular axes theorem.
- 6) Obtain an expression for the angular momentum of a rotating rigid body.

Part C

2 x 3 = 6

- 7) Compute the rotational kinetic energy of a 2 kg wheel rotating at 6 revolutions per second if the radius of gyration of the wheel is 0.22 m.
- 8) What is the meant by centre of gravity of the body?

Part D

2 x 5 = 10

- 9) Compare linear motion with rotational motion.
- 10) Obtain the 'x' and 'y' co-ordinate of the centre of mass of a body consisting of n particles.

