Resonance®
Educating for better tomorrow

TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

PHYSICS
DPP
DAILY PRACTICE PROBLEMS
DPP NO. 3

PHYSICS: RBD

DPP No. : 3

1. Four point masses, each of value m, are placed at the corners of a square ABCD of side ℓ. The moment of inertia about an axis passing through A and parallel to BD is :
(1) $m\ell^2$ (2) $2m\ell^2$ (3) $\sqrt{3}\, m\ell^2$ (4) $3m\ell^2$

2. The product of moment of inertia and angular acceleration is
(1) force (2) torque (3) angular momentum (4) rotational kinetic energy

3. A body whose moment of inertia is 3 kg-m^2 is in rest. It is rotated for 20 sec by a torque of 6 Nm, angular displacement of the body will be :
(1) 400 radian (2) 200 radian (3) 100 radian (4) 250 radian

4. A force F = $2\ \hat{i}+3\ \hat{j}-\hat{k}$ acts at a point (2, -3, 1). Then magnitude of torque about point (0, 0, 2) will be:
(1) 6 (2) $3\sqrt{5}$ (3) $6\sqrt{5}$ (4) none of these

5. The moment of inertia in rotational motion will be equivalent to …… as in linear motion :
(1) mass (2) velocity (3) momentum (4) force

6. The moment of inertia of a solid sphere about its tangential axis will be :
(1) $\frac{2}{5}MR^2$ (2) $\frac{7}{5}MR^2$ (3) $\frac{5}{3}MR^2$ (4) $\frac{2}{3}MR^2$

7. One circular ring and one circular disc, both are having the same mass and radius. The ratio of their moments of inertia about the axes passing through their centres and perpendicular to their planes. will be
(1) 1 : 1 (2) 2 : 1 (3) 1: 2 (4) 4 : 1

8. Two rings have their moments of inertia in the ratio 2 : 1 and their diameters are in the ratio 2 : 1. The ratio of their masses will be
(1) 2 : 1 (2) 1 : 2 (3) 1 : 4 (4) 1 : 1

9. The moment of inertia of a straight thin rod of mass M and length I about an axis perpendicular to its length and passing through its one end, is
(1) $MI^2/12$ (2) $MI^2/3$ (3) $MI^2/2$ (4) MI^2

10. Moment of inertia of a ring of mass M and radius R about an axis passing through the centre and perpendicular to the plane is
(1) 1/2 MR^2 (2) MR^2 (3) 1/4 MR^2 (4) 3/4 MR^2