
Concise
English

CHAPTER- ROTATIONAL MOTION

201. A particle moves in a circular path with decreasing speed. Choose the correct statement.
(a) Angular momentum remains constant
(b) Acceleration ($\vec{a}$) is towards the center
(c) Particle moves in a spiral path with decreasing radius
(d) The direction of angular momentum remains constant

202. A tube of length L is filled completely with an incompressible liquid of mass M and closed at both the ends. The tube is then rotated in a horizontal plane about one of its ends with a uniform angular velocity ω. The force exerted by the liquid at the other end is:
(a) $\frac{M\omega^2 L}{2}$ (b) $M\omega^2 L$ (c) $\frac{M\omega^2 L}{4}$ (d) $\frac{M\omega^2 L^2}{2}$

203. A mass m is moving with a constant velocity along a line parallel to the x-axis, away from the origin. Its angular momentum with respect to the origin :
(a) is zero (b) remains constant (c) goes on increasing (d) goes on decreasing

204. A smooth sphere A is moving on a frictionless horizontal plane with angular velocity ω and centre of mass velocity v. It collides elastically and head on with an identical sphere B at rest. Neglect friction everywhere. After the collision their angular speeds are ω_A and ω_B respectively. Then :
(a) $\omega_A < \omega_B$ (b) $\omega_A = \omega_B$ (c) $\omega_A = \omega$ (d) $\omega_B = \omega$

205. Consider the following two statements
(A) Linear momentum of the system of particles is zero
(B) Kinetic energy of system of particles is zero
(a) A implies B and B implies A
(b) A does not imply B and B does not imply A
(c) A implies B but B does not imply A
(d) B implies A but A does not imply B

206. Torque per unit moment of inertia is equivalent to
(a) angular velocity (b) angular acceleration
(c) radius of gyration (d) inertia

207. A spherical shell first rolls and then slips down an inclined plane. The ratio of its acceleration in two cases will be
(a) 5/3 (b) 3/5 (c) 15/13 (d) 13/15

208. The moment of inertia of a ring about its geometrical axis is I, then its moment of inertia about its diameter will be
(a) 2 I (b) $I/2$ (c) I (d) $I/4$

209. The angular momentum and the moment of the inertia are respectively
(a) vector and tensor quantities (b) scalar and vector quantities
(c) scalar and scalar quantities (d) vector and vector quantities

210. A force of 15 N is applied to a spanner at an effective length of 140 mm from the centre of a nut. The magnitude of the force required to produce the same moment if the effective length is reduced to 100 mm is
(a) 2.1 N (b) 21 N (c) 15 N (d) 0 N

211. If a hollow cylinder and a solid cylinder are allowed to roll down an inclined plane, which will take more time to reach the bottom

Copy right reserved with Entrancei

(a) Hollow cylinder (b) Solid cylinder

(c) Same for both (d) One whose density is more

212. A thin uniform circular ring is rolling down an inclined plane of inclination 30° without slipping. Its linear acceleration along the inclined plane will be

(a) $g/2$ (b) $g/3$ (c) $g/4$ (d) $2g/3$

213. A particle undergoes uniform circular motion. About which point on the plane of the circle, will the angular momentum of the particle remain conserved

(a) Centre of the circle (b) On the circumference of the circle

(c) Inside the circle any point (d) Outside the circle any point

214. A particle undergoes uniform circular motion. About which point on the plane of the circle, will the angular momentum of the particle remain conserved?

(a) Centre of circle (b) On the circumference of the circle

(c) Inside the circle (d) Outside the circle

215. A child is standing with folded hands at the centre of a platform rotating about its central axis. The kinetic energy of the system is K. The child now stretches his arms so that the moment of inertia of the system doubles. The kinetic energy of the system is K. The child now stretches his arms so that the moment of inertia of the system doubles. The kinetic energy of the system now is :

(a) $2K$ (b) $\frac{K}{2}$ (c) $\frac{K}{4}$ (d) $4K$

216. A particle moves in a circular path witch decreasing speed. Choose the correct statement : **(2005)**

(a) Angular momentum remains constant

(b) Acceleration $(\vec{a})$ is towards the centre

(c) Particle moves in a spiral path with decreasing radius

(d) The direction of angular momentum remains constant

201.	(b)	202.	(a)	203.	(b)	204.	(c)	205.	(d)
206.	(b)	207.	(b)	208.	(b)	209.	(a)	210.	(b)
211.	(a)	212.	(c)	213.	(a)	214.	(a)	215.	(b)

216 (d)

Copy right reserved with Entrancei