MULTIPLE CHOICE QUESTIONS (MCQs)

(1) The unit of angular momentum are:

* Newton sec * Joule sec * Newton metre * Joule metre

(2) The physical quantity which produces angular acceleration is called:

* Work * Force * Torque * Power

(3) Two forces which are equal in magnitude but opposite in direction and not acting on the same line constitute a:

* Circle * Couple * Power * Force

(4) A body may be in equilibrium when:

* It is in motion * It is at rest
* It is moving with a uniform acceleration
* It is moving with variable velocity

(5) The rate of change of angular momentum is equal to the: (2010)

* Force exerted on the body * Torque
* Force exerted by the body * Angular momentum

(6) Every point of a rotating rigid body has the same:

* Linear velocity * Linear momentum
* Angular velocity * Linear acceleral

(7) The dimension of the angular momentum is: (2010)

* ML^2T^{-1} * $ML^{-1}T^{-2}$ * ML^2T^{-2} * ML^2T^{-3}

(8) When the net torque acting on a system is zero this one of the following will be constant:

* Force * Angular momentum
* Linear momentum * Angular velocity

(9) Torque is defined as:

* Time rate of change of linear velocity
* Time rate of change of angular velocity
* Time rate of change of linear momentum
* Time rate of change of angular momentum

(10) The centre of mass of a system of particles:

* Coincides with C.G * Does not coincides with C.G
* Coincides with C.G in the uniform gravitational field * none of these

(11) The angular momentum is the cross product of position vector and:

* Linear velocity
* Linear momentum
* Linear acceleration
* none of these

(12) The dimension of torque are:

* ML^2T
* ML^2T^2
* ML^2T^{-2}
* MLT^2

(13) This one of the following is a spin motion:

* The motion of the plants round the sum
* The motion of electron round the nucleus
* The motion of the moon round the earth
* The daily rotation of earth causing day and night

(14) The torque acting on a body is given by:

* $\frac{1}{2}\times(\bar{r}\times\bar{F})$
* $\bar{r}\times\bar{F}$
* $\bar{r}\times\frac{1}{2}\bar{F}$
* $\bar{F}\times\bar{r}$

(15) For maximum torque the angle between $\bar{r}$ and $\bar{F}$ should be equal to:

* 0°
* 30°
* 45°
* 90°

(16) Conventionally, anti-clockwise torque is taken as:

* Positive
* Negative
* Zero
* none of these

(17) The term torque is also known as:

* Momentum of inertial
* Angular velocity
* Momentum of force
* Couple

(18) Angular momentum is measured as:

* rF
* rP Cos θ
* rP Sin θ
* rP Tan θ

(19) The S.I. unit of angular momentum is:

* g m/sec
* kg m/sec
* kg m^2/sec
* kg m^2/sec^2

(20) The total weight of body acts at:

* Its centre
* Its centre of gravity
* Its two point
* Many points

(21) A body is said to be in state of complete equilibrium if:

* Its rotational acceleration is zero
* Its translational acceleration is zero
* Its rotational and translational acceleration zero
* Its linear momentum is zero

(22) A body will be in rotational equilibrium if:

* $\sum \bar{F} = 0$ * $\sum \bar{P} = 0$ * $\sum \bar{\tau} = 0$ * $\sum \bar{L} = 0$

(23) A body will be in translational equilibrium if:

* $\sum \bar{F} = 0$ * $\sum \bar{P} = 0$ * $\sum \bar{\tau} = 0$ * $\sum \bar{L} = 0$

(24) The first condition for equilibrium of a body is that the:

* Velocity be zero * Acceleration be zero
* Vector sum of all the forces be zero * Vector sum of all the torques be zero

(25) The second condition for equilibrium of a body is that the:

* Velocity be zero * Acceleration be zero
* Vector sum of all the forces be zero * Vector sum of all the torques be zero

(26) Let torque $\bar{\tau} = \bar{r} \times \bar{F}$. The direction of torque is:

* In the direction of $\bar{r}$ * In the direction of $\bar{F}$
* Opposite to the direction of $\bar{F}$ * Normal to the plane containing $\bar{r} \times \bar{F}$

(27) Two equal and opposite forces acting on a body form:

* a Linear momentum * a Torque * a Couple * none of these

(28) For the angular momentum of a system to remain constant, the external torque should be:

* Small * Large * Zero * none of these

(29) The direction of torque and angular momentum is determined by:

* Left hand rule * Right hand rule * Addition of vectors * none of these

(30) The torque and angular momentum are related to each other by the expression:

* $\bar{\tau} = \bar{L} \times t$ * $\bar{\tau} = \frac{L}{2t}$ * $\bar{\tau} = \frac{\bar{L}}{t}$ * $\bar{\tau} = \bar{L} \times t^2$

(31) If the axis of a rotating body passes through the body itself, then its motion is called:

* Linear motion * Orbital motion
* Spin motion * Simple harmonic motion

(32) The magnitude of torque due to couple depends on:

* The distance of ($\bar{F}$) from origin * The distance of ($-\bar{F}$) from origin
* The distance between $\bar{F}$ and $-\bar{F}$ * none of these

ANSWER KEY

(1) Joule sec	(2) Torque	(3) Couple
(4) It is at rest	(5) Torque	(6) Angular velocity
(7) ML^2T^{-1}	(8) Angular momentum	(9) Time rate of change of angular momentum
(10) Coincides with C.G. in the uniform gravitational field	(11) Linear momentum	(12) ML^2T^{-2}
(13) The daily rotation of earth causing day and night	(14) $\bar{r} \times \bar{F}$	(15) 0°
(16) Positive	(17) Momentum of force	(18) rP Sin θ
(19) kg m^2/sec	(20) Its centre of gravity	(21) Its rotational and translational acceleration zero
(22) $\Sigma \bar{\tau} = 0$	(23) $\Sigma \bar{F} = 0$	(24) Vector sum of all the forces be zero
(25) Vector sum of all the forces be zero	(26) Normal to the plane containing $\bar{r} \times \bar{F}$	(27) Couple
(28) Zero	(29) Right hand rule	(30) $\bar{\tau} = \frac{\bar{L}}{t}$
(31) Spin motion	(32) The distance between $\bar{F}$ and $-\bar{F}$	