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MULTIPLE CHOICE QUESTIONS (MCQs)

- (1) The unit of angular momentum are:
* Newton sec * Joule sec * Newton meter * Joule meter
- (2) The physical quantity which produce 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 which 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 * Non of these

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- (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) Which of the following is a spin motion:
- * The motion of the planets round the sun
 - * 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:
- * $\frac{1}{2} \times (\vec{r} \times \vec{F})$
 - * $\vec{r} \times \vec{F}$
 - * $\vec{r} \times \frac{1}{2} \vec{F}$
 - * $\vec{F} \times \vec{r}$
- (15) For maximum torque the angle between \vec{r} and \vec{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
 - * $rP \cos \theta$
 - * $rP \sin \theta$
 - * $rP \tan \theta$
- (19) The S.I unit of angular momentum is:
- * g m/sec
 - * kg m/sec
 - * kg m²/sec
 - * kg m²/sec²
- (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

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

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

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

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

(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 $\vec{\tau} = \vec{r} \times \vec{F}$. The direction of torque is:

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

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

- * Linear momentum * Torque * 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 the:

- * Left hand rule * Right hand rule * Addition of vector * None of these

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

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

(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 (\vec{F}) from origin * The distance of ($-\vec{F}$) from origin
* The distance between \vec{F} and $-\vec{F}$ * 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) $\vec{r} \times \vec{F}$	(15) 0°
(16) Positive	(17) Momentum of force	(18) $rP \sin \theta$
(19) $kg \ m^2/sec$	(20) Its centre of gravity	(21) Its rotational and translational acceleration zero
(22) $\sum \vec{r} = 0$	(23) $\sum \vec{F} = 0$	(24) Vector sum of all the forces be zero
(25) Vector sum of all the forces be zero	(26) Normal to the plane containing $\vec{r} \times \vec{F}$	(27) Couple
(28) Zero	(29) Right hand rule	(30) $\vec{\tau} = \frac{\vec{L}}{t}$
(31) Spin motion	(32) The distance between \vec{F} and $-\vec{F}$	