Objective Type Questions & Answers

Select the best answer for the following MCQs:

1) The angle subtended at the center of the circle by an arc equal to its radius is called.

(a) one degree (b) one revolution (c) half rotation (d) one radian

2) One radian is equal to.

(a) 57.3° (b) 60° (c) 67.3° (d) 87.3°

3) When a body moves in a circle, the angle between the linear velocity and angular velocity ω is always.

(a) 0° (b) 45° (c) 90° (d) 180°

4) The dimension of angular velocity is,

(a) T^1 (b) LT^{-1} (c) LT^2 (d) L^1

5) When an object moves with uniform speed in a circular orbit, its centripetal acceleration must be directed,

(a) along the direction of motion (b) towards the center along the radius.

(c) away from center along the radius (d) opposite to the motion of the body

6) When a body is whirled in a horizontal circle by means of a string, the centripetal force is supplied by.

(a) mass of the body (b) velocity of the body

(c) tension in the string (d) centripetal acceleration

7) Centripetal force performs.

(a) minimum work (b) no work (c) maximum work (d) negative work

8) If a car moves with a uniform speed of 2 ms^{-1} in a circle of radius 0.4 m, its angular speed is.

(a) 1.6 rad s^{1} (b) 2.8 rad s^{-1} (c) 4 rad s^{1} (d) 5 rad s^{1}

9) When a body is whirled in a vertical circle by means of a string, the tension is maximum at.

(a) at the top (b) at the bottom

(c) at the horizontal (d) at center of diameter

10) A stone is whirled in a vertical circle at the end of the string. When the stone is at highest position the tension in the string is.

(a) minimum (b) maximum (c) zero (d) infinite

11) The angular speed for daily rotation of Earth in rad s^{-1} is.

(a) π (b) 2π (c) 4π (d) 7.3×10^{5} rad s^{-1}

12) The angular momentum L is defined by the equation.

(a) $\vec{L} = m\vec{v}$ (b) $\vec{L} = \vec{r} \times \vec{F}$ (c) $\vec{L} = \vec{p} \times \vec{r}$ (d) $\vec{L} = \vec{r} \times \vec{p}$

13) The ultimate unit of angular momentum are given by.

(a) J - m (b) J-s ^{1} (c) J-s (d) J-s **

14) Angular momentum of a body under central force is,

(a) minimum (b) maximum (c) constant (d) zero

15) S.I unit of moment of inertia is.

(a) kg m^{1} (b) kg m^{-2} (c) kg m^{2} (d) Kg m

16) The value of g at the center of the Earth is,

(a) maximum (b) minimum (c) zero (d) infinite

17) Angular momentum of a particle when r = 4 m, p = 2 N s and the angle between $\vec{r}$ and $\vec{p}$ is 30° is.

(a) 2 kg m^2 s^1 (b) 4 kg m^2 s^1 (c) 8 kg m^2 s^1 (d) 12 kg m^2 s^1

18) The value of g at a height equal to the radius of the Earth from its surface is.

(a) $g' = g$ (b) $g' = \frac{g}{2}$ (c) $g' = \frac{g}{4}$ (d) $g' = \frac{g}{9}$

19) A man in an elevator, ascending with an acceleration will conclude that his weight has.

(a) remains constant (b) increased

(c) decreased (d) reduced to zero

20) Minimum number of communication satellites required to cover the whole Earth is.

(a) 2 (b) 3 (c) 4 (d) 5

21) A man of 100 kg is standing on an elevator. The net force on the man when elevator is going down with an acceleration of 4 ms^{-1} would be.

(a) 5.80 N (b) 680 N (c) 500 N (d) 100 N

22) The frequency of rotation of a space ship about its own axis to create artificial gravity like that on the Earth is.

(a) $f = \frac{1}{2\pi}\sqrt{\frac{R}{g}}$ (b) $f = \frac{1}{2\pi}\sqrt{\frac{g}{R}}$ (c) $f = \frac{1}{2\pi}\sqrt{\frac{g}{R}}$ (d) $f = 2\pi\sqrt{\frac{g}{R}}$

23) The linear velocity of a disc moving down an inclined plane is.

(a) $\sqrt{\frac{1}{2}gh}$ (b) $\sqrt{gh}$ (c) $\sqrt{\frac{2}{3}gh}$ (d) $\sqrt{\frac{4}{3}gh}$

24) One communication satellite covers a longitude of.

(a) 90° (b) 120° (c) 270° (d) 360°

25) The diver spins faster when moment of inertia becomes.

(a) smaller (b) greater (c) constant (d) none of these

26) Einstein theory states that bodies and light rays move along.

(a) geo disc (b) force of gravity (c) both a & b (d) none of these