

Class - XI

Chapter – Circular motion

Date - 07.07.20

Topic – Basics of circular mmotion

Choose the correct option for the following questions.

 $1 \times 15 = 15$ 

- 1. A car moves on a circular road, describing equal angles about the centre in equal interval of times. Which of the statements about its velocity is true?
  - a. Velocity is constant
  - b. Magnitude of velocity is constant but direction changes
  - c. Both magnitude and direction change
  - d. Velocity is directed towards the centre of circle
- 2. An insect trapped in a circular groove of radius 12cm moves along the groove steadily and completes 7 revaluations in 100sec. what is the linear speed of the motion?
  - a. 2.3 cm/s
  - b. 5.3 cm/s
  - c. 0.44 cm/s
  - d. None of these
- 3. A particle moves in a circle of the radius 25 cm at two revolutions per second. The acceleration of the particle in  $m/s^2$  is
  - a.  $\pi^2$
  - b.  $8\pi^2$
  - c.  $4\pi^2$
  - d.  $2\pi^2$
- 4. A particle moves in a circle describing equal angle in equal times, its velocity vector
  - a. Remains constant
  - b. Change in magnitude
  - c. Change in direction
  - d. Changes in magnitude and direction
- 5. The angular displacement is given as  $\theta = 2t^3 + 0.5$  where  $\theta$  is in radians and t is sec. the angular velocity of the particle after 2s from its starting is
  - a. 8 rad/s
  - b. 12 rad/s
  - c. 24 rad/s
  - d. 36 rad/s
- 6. A body moves with constant angular velocity on a circle. Magnitude of angular acceleration is
  - a.  $w^2r$
  - b. Constant
  - c. Zero
  - d. None of these



- 7. A particle of mass m revolving in horizontal circle of radius r with uniform speed v. when partricle goes from one end to another end of diameter, then
  - a. K.E. changes by  $\frac{1}{2}mv^2$
  - b. K.E. changes by  $mv^2$
  - c. No change in momentum
  - d. Change in momentum is 2mv
- 8. The angular velocity of a particle rotating in a circular orbit 100 times per minute is
  - a. 1.66 rad/s
  - b. 10.47 rad/s
  - c. 10.47 degree/s
  - d. 60 degree/s
- 9. Angular velocity of minute hand of clock is
  - a.  $\frac{\pi}{30}$  rad/s
  - b. 8π rad/s
  - c.  $\frac{2\pi}{1800}$  rad/s
  - d.  $\frac{\pi}{1800}$  rad/s
  - $\frac{1800}{1800}$
- 10. The angular velocity of a wheel is 70 rad/s. if the radius is 0.5m, then linear speed is
  - a. 70 m/s
  - <mark>b. 35m/s</mark>
  - c. 30m/s
  - d. 20m/s
- 11. A fly wheel rotating at 600 rev/min is brought under uniform deceleration and stopped after 2 min. The angular deceleration in  $rad/s^2$  is
  - a.  $\frac{\pi}{6}$
  - b. 10π
  - c.  $\frac{1}{12}$
  - d. 300
- 12. The ratio of the angular velocities of minute hand and hour hand of a clock is
  - a. 1:12
  - b. 6:1
  - c. 12:1
  - d. 1:6
- 13. A ceiling fan is switched off while rotating with a speed of 100rpm. It stops after 15secs. How many turns has it completed within that 15sec?
  - <mark>a. 12.5</mark>
  - b. 40
  - c. 32.6
  - d. 15.6
- 14. If the angular speed of a wheel is 120rpm, then in rad/s unit it will be
  - a.  $\pi^2$
  - <mark>b. 4π</mark>
  - c. 2π
  - d.  $4\pi^2$

- 15. A fan is switched on at rest ( length of one blade is l ). If the linear speed at the edge of a blade after rotating  $\theta$  angle be v, then the angular acceleration is
  - a.  $\frac{v^2}{r}$ b.  $\frac{2v^2}{r^{2\theta}}$ c.  $\frac{v^2}{r^{2\theta}}$ d.  $\frac{v^2}{r^{2\theta}}$

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