



DPP – 1 (Circular Motion)

Video Solution on Website:-

<https://physicsaholics.com/home/courseDetails/39>

Video Solution on YouTube:-

<https://youtu.be/3KMTUMzkQjk>

Written Solution on Website:-

<https://physicsaholics.com/note/notesDetailis/42>

- Q 1. The angular velocity of a particle is given by $\omega = 1.5t - 3t^2 + 2$, Find the time when its angular acceleration becomes zero:
(a) 0.25 sec (b) 0.5 sec
(c) 1 sec (d) 2 sec
- Q 2. A wheel rotates with an angular acceleration given by $\alpha = 4at^3 - 3bt^2$, where t is the time and a and b are constants. If the wheel has initial angular speed ω_0 , write the equations for the angular speed:
(a) $\omega = \omega_0 + 4at^4 - 3bt^3$ (b) $\omega = \omega_0 + at^4 - bt^3$
(c) $\omega = at^4 - bt^3$ (d) $\omega = 4at^4 - 3bt^3$
- Q 3. A grinding wheel attained a velocity of 20 rad/sec in 5 sec starting from rest. Find the number of revolutions made by the wheel.
(a) $\pi/25$ revolutions (b) $1/\pi$ revolutions
(c) $25/\pi$ revolutions (d) none of these
- Q 4. The magnitude of displacement of a particle moving in a circle of radius with a constant angular speed ω varies with time t as:
(a) $2a \sin \omega t$ (b) $2a \sin (\omega t / 2)$
(c) $2a \cos \omega t$ (d) $2a \cos (\omega t / 2)$
- Q 5. The ratio of angular speeds of minutes hand and hour hand of a watch is -
(a) 1 : 12 (b) 6 : 1
(c) 12 : 1 (d) 1 : 6
- Q 6. The angular displacement of a particle is given by $\theta = (t^3 + t^2 + t + 1)$ rad then, its angular velocity (in rad/s) at t = 2 sec is:
(a) 27 (b) 17
(c) 15 (d) 16
- Q 7. The angular displacement of a particle performing circular motion is $\theta = \left(\frac{t^3}{60} - \frac{t}{4}\right)$ where θ is in radian and 't' is in second. Then the angular velocity and angular acceleration of particle at the end of 5 s will be:
(a) 1 rad/s, 5 rad/s² (b) 1 rad/s, 0.5 rad/s²
(c) 5 rad/s, 1 rad/s² (d) 0.1 rad/s, 5 rad/s²
- Q 8. What is the angular acceleration of a particle if the angular velocity of a particle becomes 4 times of its initial angular velocity 1 rad/s in 2 seconds:
(a) 0.5 rad/s² (b) 1 rad/s²



(c) 1.5 rad/s^2

(d) 2 rad/s^2

Q 9. A fan is rotating with angular velocity 100 rev/s . Then it switched off. It takes 5 min to stop. Find the total number of revolution made before the fan stops: (assume uniform angular retardation)

(a) 9000 rev

(b) 13000 rev

(c) 15000 rev

(d) 4500 rev

Q 10. The angular acceleration of a fan is $\alpha = -\frac{3}{2}t^2$. At the initial moment, its angular velocity $\omega = 10 \text{ rad/s}$ and has an angular position of 1 rad . Choose the incorrect option:

(a) its angular velocity at $t=1 \text{ sec}$. is 9.5 rad/s

(b) its angular position at $t=2 \text{ sec}$. is 5 rad

(c) its angular velocity at $t=2 \text{ sec}$. is 6 rad/s

(d) its angular position at $t=1 \text{ sec}$. is $\frac{87}{8} \text{ rad}$

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Answer Key

Q.1 a	Q.2 b	Q.3 c	Q.4 b	Q.5 c
Q.6 b	Q.7 b	Q.8 c	Q.9 c	Q.10 b