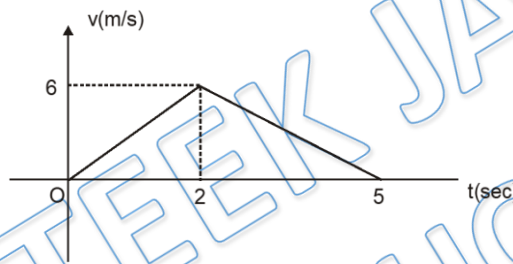




DPP – 1

- Q 1. The displacement of a particle is given by $x = (t - 2)^2$ where x is in metres and t in seconds. The distance covered by the particles in first 4 seconds is:
(a) 12 m (b) 6 m (c) 9 m (d) 18 m
- Q 2. The velocity of a particle increases linearly with time i.e. $v = k t$, where $k = 2 \text{ m/s}^2$. The distance covered in first three seconds will be:
(a) 12 m (b) 6 m (c) 9 m (d) 18 m
- Q 3. The acceleration of particle varies with time as : $a(t) = 3t^2 + 4$. If the initial velocity of particle is 2 m/s , find the velocity of particle at $t = 3 \text{ sec}$.
(a) 41 m/s (b) 4 m/s (c) 39 m/s (d) 27 m/s

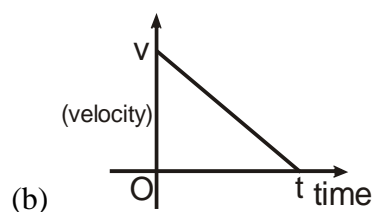
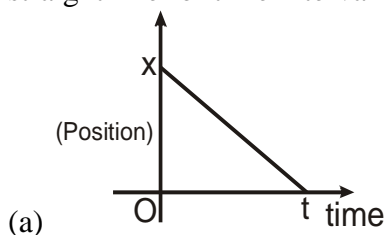
- Q 4. From the velocity-time graph of a particle determine the acceleration of particle at $t = 1 \text{ sec}$:

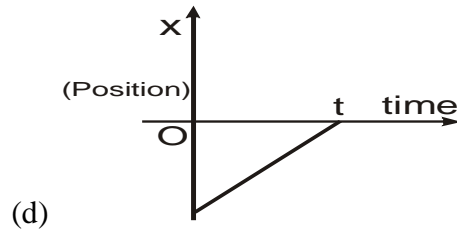
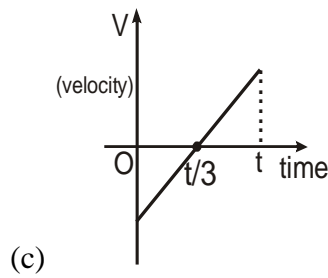


- (a) 3 m/s^2 (b) 6 m/s^2
(c) 2 m/s^2 (d) 5 m/s
- Q 5. The magnitude of the displacement is equal to the distance covered in a given interval of time if the particle.
(a) moves with constant acceleration along any path
(b) moves with constant speed
(c) moves in same direction with constant velocity or with variable velocity
(d) have acceleration and velocity in opposite direction.
- Q 6. A straight road connects two cities. In certain intervals of time two buses from each city move to the other with equal velocities. To a cyclist moving at 15 km/hr moving from one city to another a bus from behind overtakes in every 15 minutes and crosses from the other direction in every 9 minutes. Find the velocity of the buses and their time interval.
(a) 45 km/hr , 21 min. 25 sec (b) 60 km/hr , 11 min. 15 sec
(c) 15 km/hr , 45 min. 10 sec (d) 30 km/hr , 22 min. 30 sec

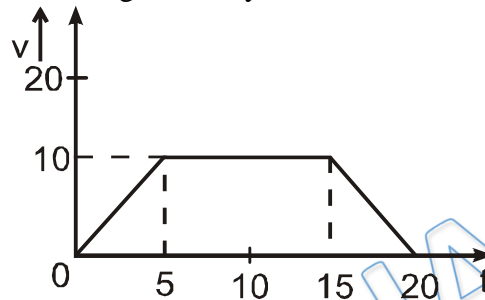


- Q 7. A particle moves along the positive branch of the curve $y = \frac{x^2}{2}$ where $x = \frac{t^2}{2}$, x and y are measured in metres and t in seconds. At $t = 2$ s, the velocity of the particle is
(a) $2\hat{i} - 4\hat{j}$ m/s (b) $4\hat{i} + 2\hat{j}$ m/s
(c) $2\hat{i} + 4\hat{j}$ m/s (d) $4\hat{i} - 2\hat{j}$ m/s
- Q 8. The velocity of a particle moving in the x - y plane is given by $\frac{dx}{dt} = 8\pi \sin 2\pi t$, $\frac{dy}{dt} = 5\pi \cos 2\pi t$. When $t = 0$, $x = 8$ and $y = 0$. The path of the particle is
(a) A straight line (b) A circle (c) An ellipse (d) Parabola
- Q 9. The displacement of particle varies with time as: $S = 3t^2 + 2t$. Find the velocity of the particle at $t = 1$ sec.
(a) 5m/s (b) 2m/s (c) 8m/s (d) 6m/s
- Q 10. The velocity of a particle is given as $v(t) = t^3 + 2t + 1$. Find the acceleration of the particle at time $t = 1$ sec.
(a) 4 (b) 5 (c) 2 (d) 3
- Q 11. A ball is thrown vertically up with a certain velocity. It attains a height of 40 m and comes back to the thrower. Then choose the correct option : ($g = 10\text{m/s}^2$)
(a) the average speed of the ball for the round trip is zero.
(b) total displacement is 80 m
(c) total displacement is zero
(d) the average velocity for round trip is non zero
- Q 12. A point moves in a straight line in such a manner that its retardation is proportional to its speed. Then
(a) Distance is proportional to the increase in speed
(b) Distance is proportional to the speed destroyed
(c) Average velocity of the particle is constant
(d) None of these
- Q 13. The displacement of a body is given by $r = \sqrt{a^2 - t^2} + t \cos t^2$, where t is the time and a is constant. Its velocity is:
(a) $\frac{-t}{\sqrt{a^2 - t^2}} + \cos t^2 - t \sin 2t$ (b) $\frac{-t}{\sqrt{a^2 - t^2}} + \cos t^2 - 2t^2 \sin t^2$
(c) $\frac{-a}{(a^2 - t^2)} + 2t \cos t^2 \sin t + \sin t$ (d) $a - t^2 - t \sin t^2$
- Q 14. For which of the following graphs the average velocity of a particle moving along a straight line for time interval $(0, t)$ must be negative -



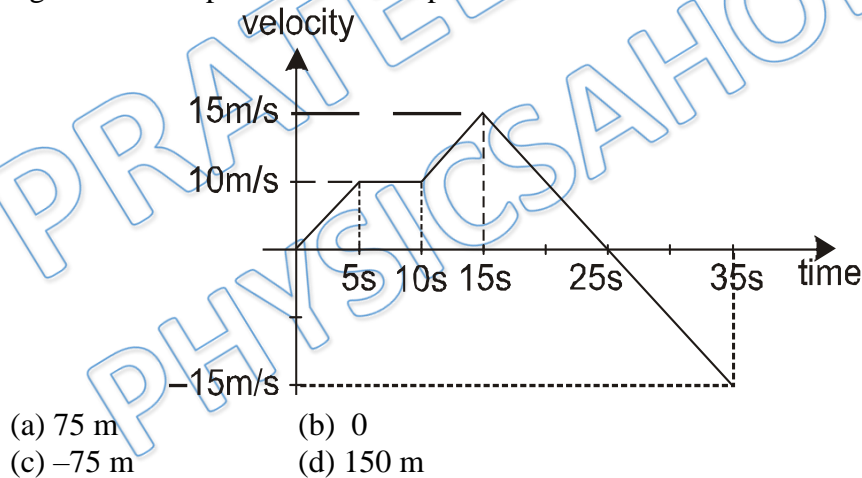


Q 15. Figure shows the velocity time graph of a particle moving along straight line (v is m/s and t is in seconds). Its average velocity in 20 seconds will be:



- (a) 10 m/s
(b) zero
(c) 3.75 m/s
(d) 7.5 m/s

Q 16. A person starts from origin and for his linear motion velocity is given as shown in figure. Find displacement of the person from $t = 15$ sec to $t = 35$ sec.





Answer Key

Q.1 b	Q.2 c	Q.3 a	Q.4 a	Q.5 c
Q.6 b	Q.7 c	Q.8 c	Q.9 c	Q.10 b
Q.11 c	Q.12 b	Q.13 b	Q.14 a	Q.15 d
Q.16 b				

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