

Objective Questions

Multiple Choice Questions

1. Which of the following is an example of one-dimensional motion?

- (a) Landing of an aircraft
- (b) Earth revolving around the sun
- (c) Motion of wheels of moving train
- (d) Train running on a straight track

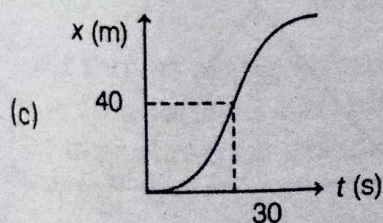
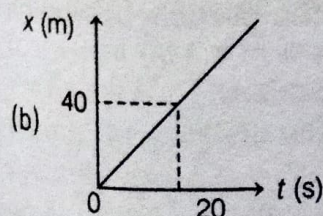
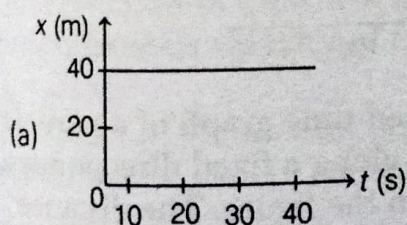
2. The coordinates of object with respect to a frame of reference at $t = 0$ s are $(-1, 0, 3)$. If $t = 5$ s, its coordinates are $(-1, 0, 4)$, then the object is in

- (a) motion along Z-axis
- (b) motion along X-axis
- (c) motion along Y-axis
- (d) rest position between $t = 0$ s and $t = 5$ s

3. A person moves towards east for 3 m, then towards north for 4 m and then moves vertically up by 5 m. What is his distance now from the starting point?

- (a) $5\sqrt{2}$ m
- (b) 5 m
- (c) 10 m
- (d) 20 m

4. For a stationary object at $x = 40$ m, the position-time graph is



- (d) None of the above

5. The displacement of a car is given as -240 m, here negative sign indicates

- (a) direction of displacement
- (b) negative path length
- (c) position of car at that point
- (d) no significance of negative sign

6. Snehit starts from his home and walks 50 m towards north, then he turns towards east and walks 40 m and then reaches his school after moving 20 m towards south. Then, his displacement from his home to school is

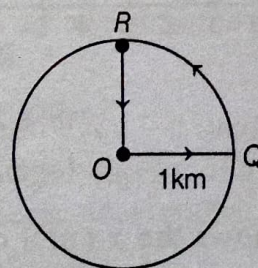
- (a) 50 m
- (b) 110 m
- (c) 80 m
- (d) 40 m

7. A vehicle travels half the distance l with speed v_1 and the other half with speed v_2 , then its average speed is

(NCERT Exemplar)

- (a) $\frac{v_1 + v_2}{2}$
- (b) $\frac{2v_1 + v_2}{v_1 + v_2}$
- (c) $\frac{2v_1 v_2}{v_1 + v_2}$
- (d) $\frac{l(v_1 + v_2)}{v_1 v_2}$

8. A runner starts from O and comes back to O following path $OQRO$ in 1h. What is his net displacement and average speed?



- (a) 0, 3.57 km/h
- (b) 0, 0 km/h
- (c) 0, 2.57 km/h
- (d) 0, 1 km/h

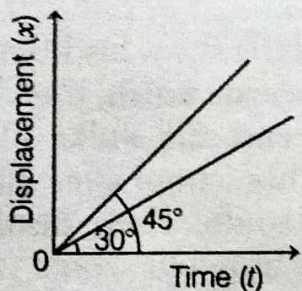
9. The sign (+ ve or - ve) of the average velocity depends only upon

- (a) the sign of displacement
- (b) the initial position of the object
- (c) the final position of the object
- (d) None of the above

10. Find the average velocity, when a particle completes the circle of radius 1m in 10 s.

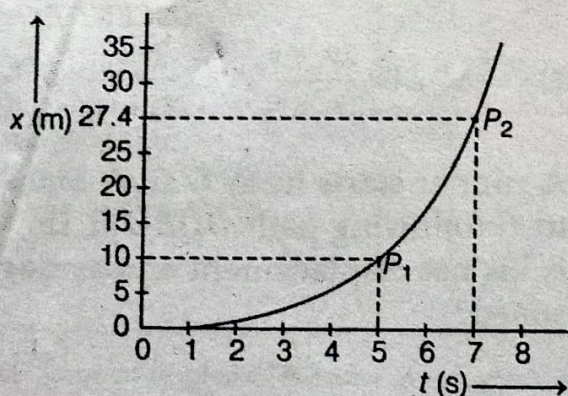
(a) 2 m/s (b) 3.14 m/s (c) 6.28 m/s (d) zero

11. The displacement-time graph of two moving particles make angles of 30° and 45° with the X -axis. The ratio of their velocities is



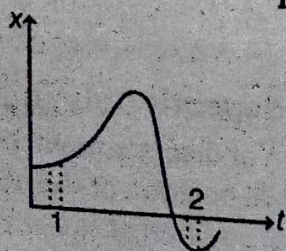
(a) $1:\sqrt{3}$ (b) 1:2 (c) 1:1 (d) $\sqrt{3}:2$

12. In figure, displacement-time ($x-t$) graph given below, the average velocity between time $t = 5$ s and $t = 7$ s is



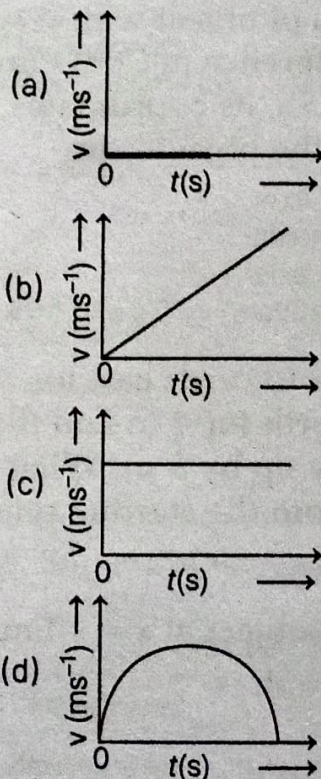
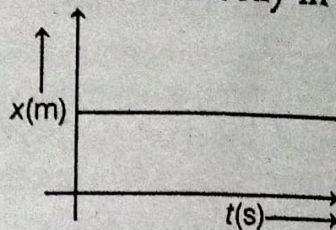
(a) 8 ms^{-1} (b) 8.7 ms^{-1}
(c) 7.8 ms^{-1} (d) 13.7 ms^{-1}

13. Figure shows the $x-t$ plot of a particle in one-dimensional motion. Two different equal intervals of time show speed in time intervals 1 and 2 respectively, then

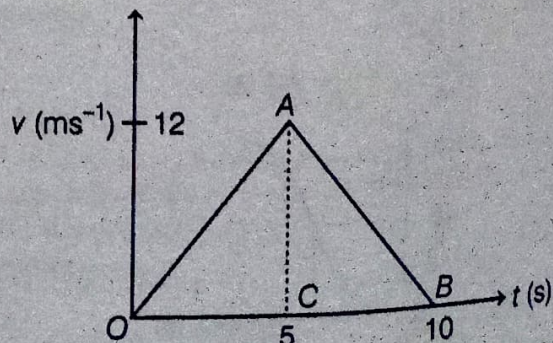


(a) $v_1 > v_2$
(b) $v_2 > v_1$
(c) $v_1 = v_2$
(d) Data insufficient

14. For the $x-t$ graph given below, the $v-t$ graph is shown correctly in



15. The speed-time graph of a particle moving along a fixed direction is as shown in the figure. The distance traversed by the particle between $t = 0$ s to $t = 10$ s is



(a) 20 m (b) 40 m (c) 60 m (d) 80 m

16. If an object is moving in a straight line, then

- (a) the directional aspect of vector can be specified by + ve and - ve signs
- (b) instantaneous speed at an instant is equal to the magnitude of the instantaneous velocity at that instant
- (c) Both (a) and (b)
- (d) Neither (a) nor (b)

17. In one dimensional motion, instantaneous speed v satisfies

$$0 \leq v < v_0. \text{ Then (NCERT Exemplar)}$$

- (a) displacement in time T must always take non-negative values
- (b) displacement x in time T satisfies $-v_0 T < x < v_0 T$
- (c) acceleration is always a non-negative number
- (d) motion has no turning points

18. The $x-t$ equation is given as $x = 2t + 1$.

The corresponding $v-t$ graph is

- (a) a straight line passing through origin
- (b) a straight line not passing through origin
- (c) a parabola
- (d) None of the above

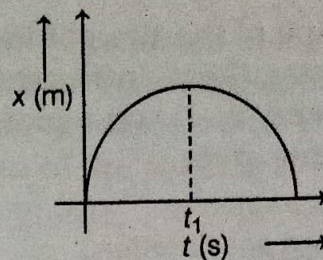
19. The displacement x of an object is given as a function of time, $x = 2t + 3t^2$. The instantaneous velocity of the object at $t = 2$ s is

- (a) 16 ms^{-1}
- (b) 14 ms^{-1}
- (c) 10 ms^{-1}
- (d) 12 ms^{-1}

20. The displacement of a particle starting from rest (at $t = 0$) is given by $s = 6t^2 - t^3$. The time in seconds at which the particle will attain zero velocity again is

- (a) 2
- (b) 4
- (c) 6
- (d) 8

21. A car moves along a straight line according to the $x-t$ graph given below. The instantaneous velocity of the car at $t = t_1$ is

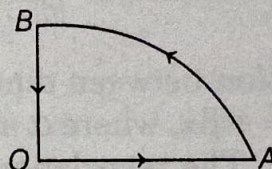


- (a) zero
- (b) positive
- (c) Data insufficient
- (d) Cannot be determined

22. A particle moves in a straight line. It can be accelerated

- (a) only, if its speed changes by keeping its direction same
- (b) only, if its direction changes by keeping its speed same
- (c) Either by changing its speed or direction
- (d) None of the above

23. An object is moving along the path $OABO$ with constant speed, then



- (a) the acceleration of the object while moving along to path $OABO$ is zero
- (b) the acceleration of the object along the path OA and BO is zero
- (c) there must be some acceleration along the path AB
- (d) Both (b) and (c)

24. The average velocity of a body moving with uniform acceleration travelling a distance of 3.06 m is 0.34 ms^{-1} . If the change in velocity of the body is 0.18 ms^{-1} during this time, its uniform acceleration is

- (a) 0.01 ms^{-2}
- (b) 0.02 ms^{-2}
- (c) 0.03 ms^{-2}
- (d) 0.04 ms^{-2}