Yakeen NEET 2.0 2026

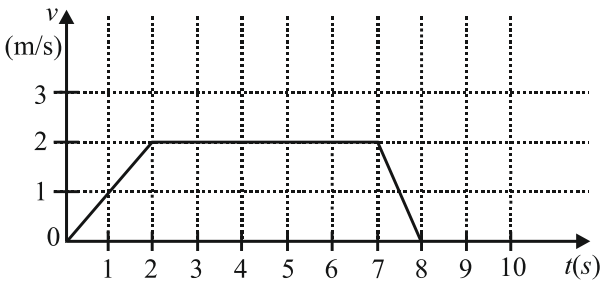
Physics by MR Sir

Motion in a Straight Line

Assignment-05
By: M.R. Sir

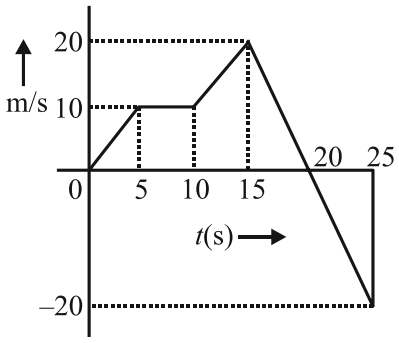
1. A particle starts from the origin at time $t = 0$ and moves along the positive x-axis. The graph of velocity with respect to time is shown in figure. What is the position of the particle at time $t = 5$s?

[2019]



(1) 10 m
(2) 6 m
(3) 3 m
(4) 7 m

2. From the v-t graph shown, the ratio of distance to displacement in 25s of motion **[2023]**



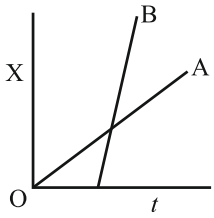
(1) $\frac{3}{5}$
(2) $\frac{1}{2}$
(3) $\frac{5}{3}$
(4) 1

3. Given below are two statements:
Statement-I: Area of the velocity-time graph gives the distance travelled by the body in a given time.
Statement-II: Area under acceleration-time graph is equal to the change in velocity in the given time.

[1997]

(1) Both Statement I and Statement II are true.
(2) Statement I is true but Statement II is false.
(3) Statement I is false but Statement II is true.
(4) Both Statement I and Statement II are False.

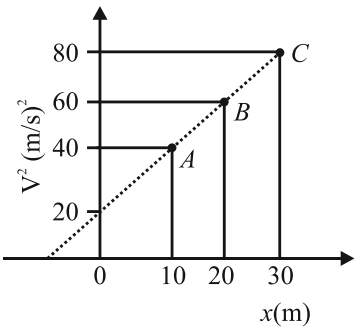
4. The position-time graphs for two students A and B returning from the school to their homes are shown in figure. **[2023]**



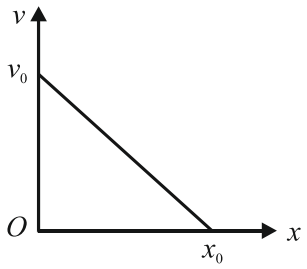
(A) A lives closer to the school
(B) B lives closer to the school
(C) A takes lesser time to reach home
(D) A travels faster than B
(E) B travels faster than A
(1) (A) and (E) only
(2) (B) and (E) only
(3) (A), (C) and (E) only
(4) (A), (C) and (D) only

5. A particle is moving with constant acceleration 'a'. Following graph shows v^2 versus x (displacement) plot. The acceleration of the particle is ____ m/s^2.

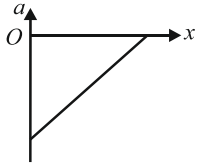
[2021]

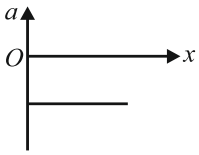


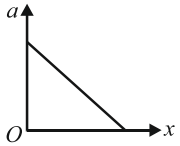
6. The velocity-displacement graph of a particle is shown in the figure.

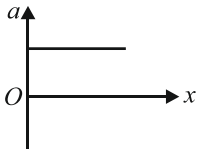


The acceleration-displacement graph of the same particle is represented by: **[2021]**

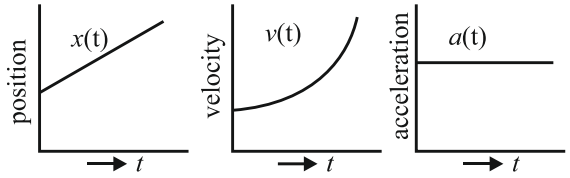
(1) 

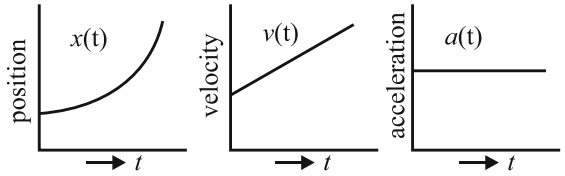
(2) 

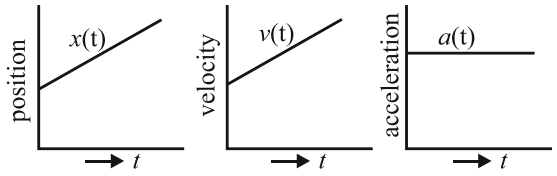
(3) 

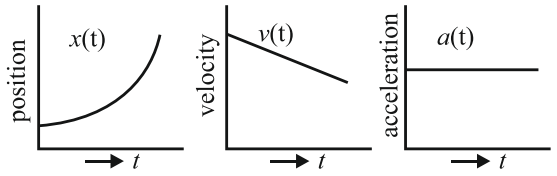
(4) 

7. The position, velocity and acceleration of a particle moving with a constant acceleration can be represented by **[2021]**

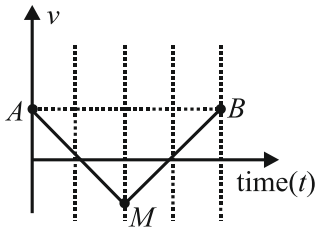
(1) 

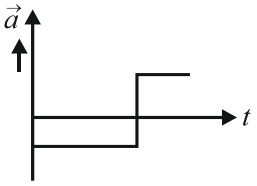
(2) 

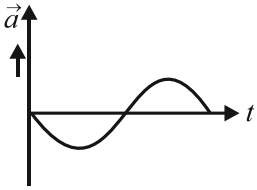
(3) 

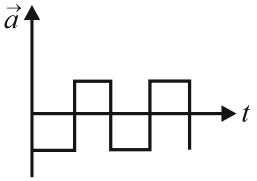
(4) 

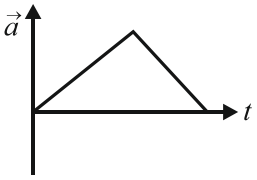
8. If the velocity-time graph has the shape *AMB*, what would be the shape of the corresponding acceleration-time graph? **[2021]**



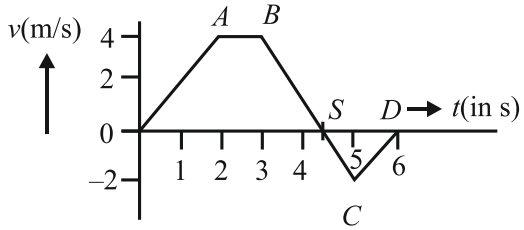
(1) 

(2) 

(3) 

(4) 

9. The velocity (v) and time (t) graph of a body in a straight line motion is shown in the figure. The point S is at 4.333 second. The total distance covered by the body in 6 s is **[2020]**



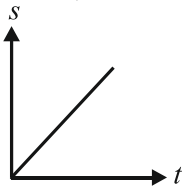
(1) $\frac{37}{3}$ m

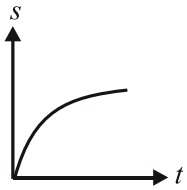
(2) 11 m

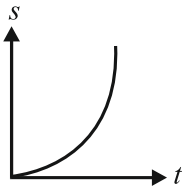
(3) 12 m

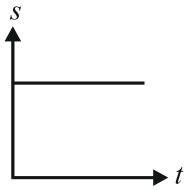
(4) $\frac{49}{4}$ m

10. A particle is moving unidirectionally on a horizontal plane under the action of a constant power supplying energy source. The displacement (s) – time (t) graph that describes the motion of the particle is (graphs are drawn schematically and are not to scale) **[2020]**

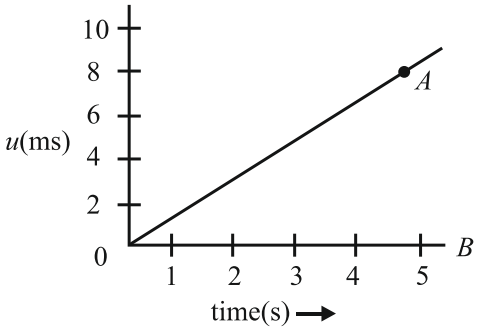
(1) 

(2) 

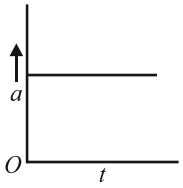
(3) 

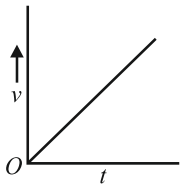
(4) 

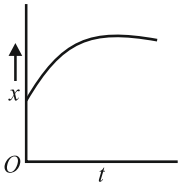
11. The speed versus time graph for a particle is shown in the figure. The distance travelled (in m) by the particle during the time interval $t = 0$ to $t = 5$ s will be _____. **[2020]**

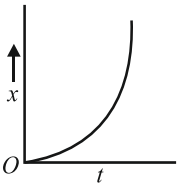


12. A particle starts from origin O from rest and moves with a uniform acceleration along the positive x-axis. Identify the figure that is not correctly representing the motion qualitatively.
(a = acceleration, v = velocity, x = displacement, t = time) **[2019]**

(A) 

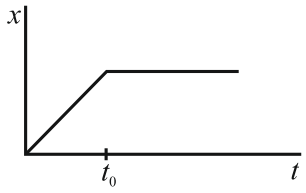
(B) 

(C) 

(D) 

(1) (A), (B), (C) (2) (A)
(3) (C) (4) (B), (C)

13. Figure shows the displacement-time graph of a particle moving on the x-axis.



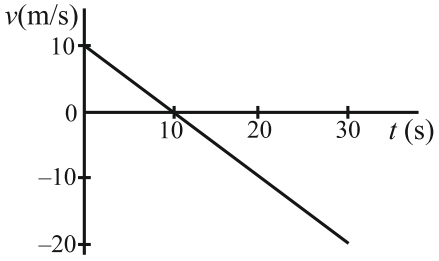
(1) the particle is continuously going in positive x-direction

(2) the particle is at rest

(3) the velocity increases up to a time t_0, and then becomes constant

(4) the particle moves at a constant velocity up to a time t_0, and then stops.

14. The velocity-time plot for a particle moving on a straight line is shown in the figure.



(1) The particle has a constant acceleration.

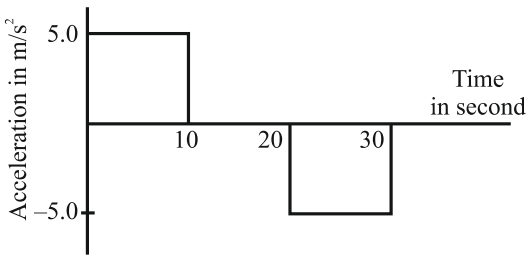
(2) The particle has never turned around.

(3) The particle has zero displacement.

(4) The average speed in the interval 0 to 10 s is the same as the average speed in the interval 10 s to 20 s.

(5) Both (1) and (4)

15. The acceleration of a cart started at $t = 0$, varies with time as shown in figure. Find the distance travelled in 30 seconds and draw the position -time graph.

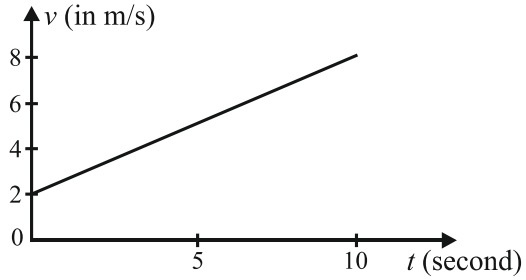


16. Figure shows the graph of velocity versus time for a particle going along the x-axis. Find

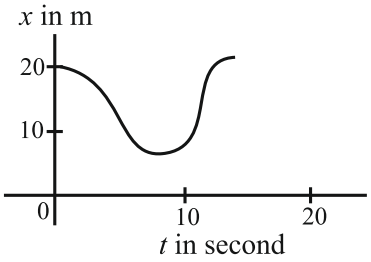
(a) the acceleration,

(b) the distance travelled in 0 to 10 s and

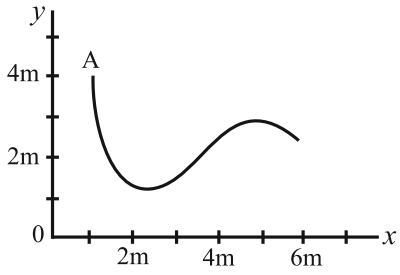
(c) the displacement in 0 to 10s.



18. Figure shows x-t graph of a particle. Find the time t such that the average velocity of the particle during the period 0 to t is zero. **[1997]**



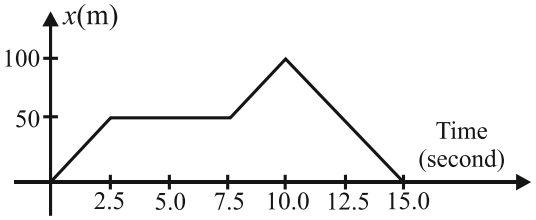
19. A particle starts from a point A and travels along the solid curve shown in figure. Find approximately the position B of the particle such that the average velocity between the positions A and B has the same direction as the instantaneous velocity at B.



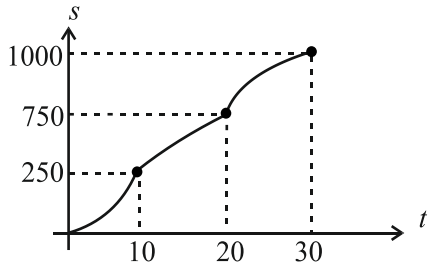
17. Figure shows the graph of x-coordinate of a particle going along the x-axis as a function of time. Find

(a) the average velocity during 0 to 10s,

(b) instantaneous velocity at 2, 5, 8 and 12s.



ANSWER KEY

1. (4)
2. (3)
3. (3)
4. (1)
5. (1)
6. (2)
7. (2)
8. (1)
9. (1)
10. (3)
11. (20)
12. (4)
13. (4)
14. (5)
15. 

16. (a) 0.6 m/s^2, (b) 50 m, (c) 50 m
17. (a) 10 m/s,
(b) $v_2 = 20$ m/s, $v_5 = 0$ m/s, $v_8 = 20$ m/s, $v_{12} = -20$ m/s
18. ($t = 12$ s)
19. (5 m, 3 m)

PW Web/App - https://smart.link/7wwosivoicgd4

Library- https://smart.link/sdfez8ejd80if