Yakeen NEET 2.0 2026

Motion in a straight line

Assignment-06
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1. A bullet fired into a fixed target loses half of its velocity after penetrating 1 cm. How much further it will penetrate before coming to rest, assuming that it faces constant resistance to motion **[AIEEE 2005]**

(1) 1.5 cm (2) 1.0 cm

(3) 3.0 cm (4) 2.0 cm

2. A particle moves in a straight line with a constant acceleration. It changes its velocity from 10 m/s to 20 m/s while passing through a distance of 135 m in t second. The value of t is **[CBSE PMT 2008]**

(1) 12 (2) 9

(3) 10 (4) 1.8

3. Speed of two identical cars are u and $4u$ at a specific instant. The ratio of the respective distances in which the two cars are stopped from that instant is

[AIEEE 2002]

(1) 1 : 1 (2) 1 : 4

(3) 1 : 8 (4) 1 : 16

4. A car, starting from rest, accelerates at the rate α through a distance d, then continues at a constant speed for time t and then decelerates at the rate of $\alpha/2$ to come to rest. If the total distance traveled is $15d$, then **[AIEEE 2008]**

(1) $d = \frac{1}{2}\alpha t^2$

(2) $d = \frac{1}{4}\alpha t^2$

(3) $d = \frac{1}{72}\alpha t^2$

(4) $d = \frac{1}{6}\alpha t^2$

5. A body travels for 15 s starting from rest with a constant acceleration. If it travels distances x, y and z in the first 5 s, second 5 s and the next 5 s, respectively, the relation between x, y and z is

(1) $x = y = z$ (2) $5x = 3y = z$

(3) $x = \frac{y}{3} = \frac{z}{5}$ (4) $x = \frac{y}{5} = \frac{z}{3}$

6. A body moving with a uniform acceleration crosses a distance of 15 m in the 3rd second and 23 m in the 5th second. The displacement in 10 s will be

(1) 150 m (2) 200 m

(3) 250 m (4) 300 m

7. A ball is released from the top of a tower of height h meters. It takes T seconds to reach the ground. What is the position of the ball at $T/3$ second?

[AIEEE 2004]

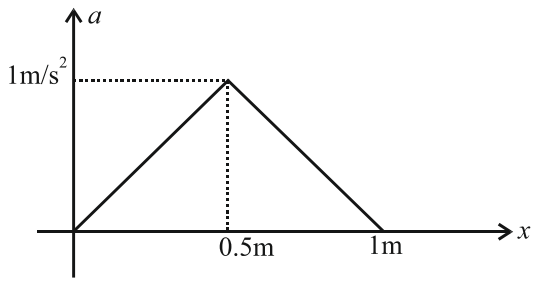
(1) $h/9$ meters from the ground

(2) $7h/9$ meters from the ground

(3) $8h/9$ meters from the ground

(4) $17h/18$ meters from the ground

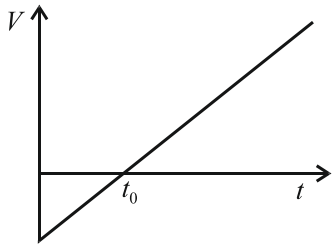
8. A body initially at rest, starts moving along x-axis in such a way so that its acceleration vs displacement plot is as shown in figure. The maximum velocity of particle is:



(1) 1 m/s (2) 6 m/s

(3) 2 m/s (4) none

9. Figure shows velocity time graph of a particle moving in straight line. Which of the following statement(s) is/are correct:



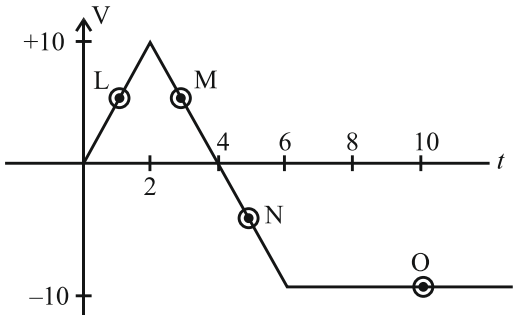
(1) Particle crosses its initial position

(2) Speed of the particle increases continuously

(3) Acceleration of particle is zero

(4) At t_0, $\frac{d|\vec{V}|}{dt}$ of particle is zero

10. A particle starts from origin and moving along x-axis, whose v-t graph is as shown. Choose the incorrect statement:



(1) At point L particle is speeding up.

(2) At point M particle is moving in positive x-direction.

(3) At point N particle is speeding up.

(4) At point O particle is rest.

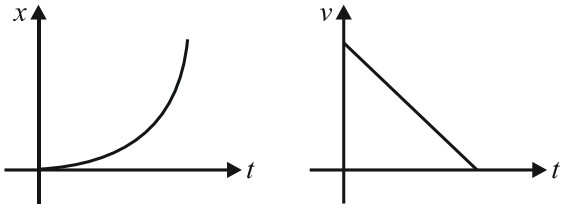
11. A body starts accelerating uniformly from rest. If t_1, t_2 and t_3 are the time taken by the body to cover successive equal distances, then $t_1 : t_2 : t_3$ is

(1) $1 : \sqrt{2} : \sqrt{3}$ (2) $1:\sqrt{2}-1:\sqrt{3}-\sqrt{2}$

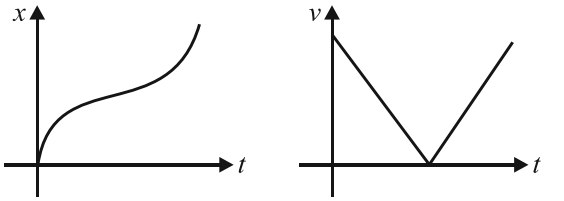
(3) 1 : 2 : 3 (4) None of these

12. Which of the following pairs of graphs does not represent the motion of the same particle in the same interval (curves are parabolic):

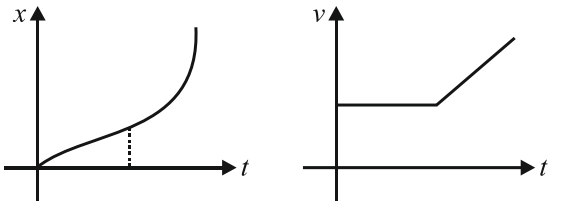
(1)



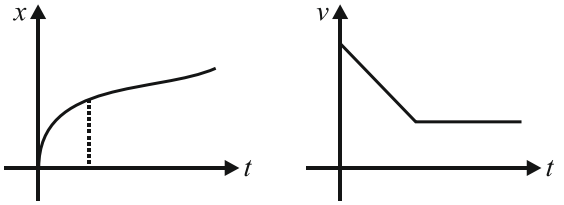
(2)



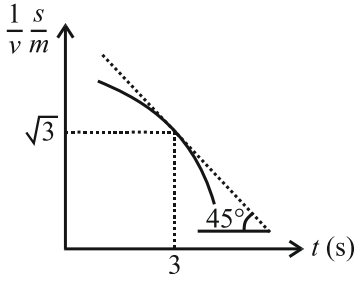
(3)



(4)



13. the diagram shows variation of $\frac{1}{v}$ with respect to time (where v is in m/s).

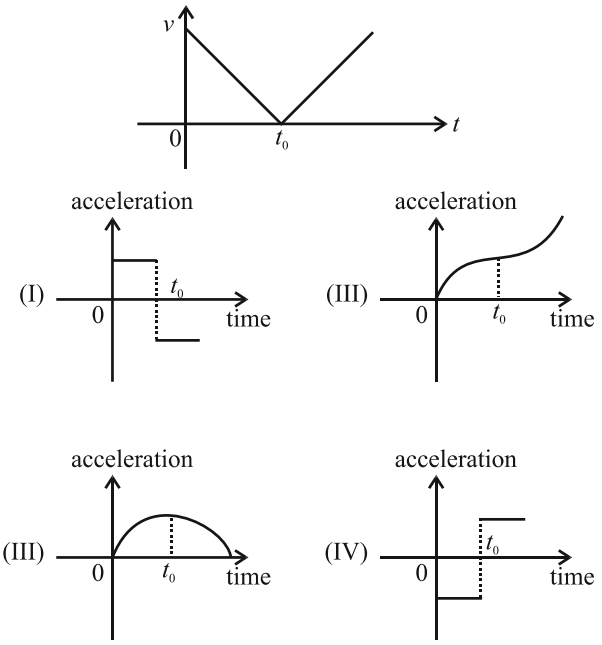


What is the instantaneous acceleration of body at $t = 3$ sec. $\left(\text{in}\frac{\text{m}}{\text{s}^2}\right)$?

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

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

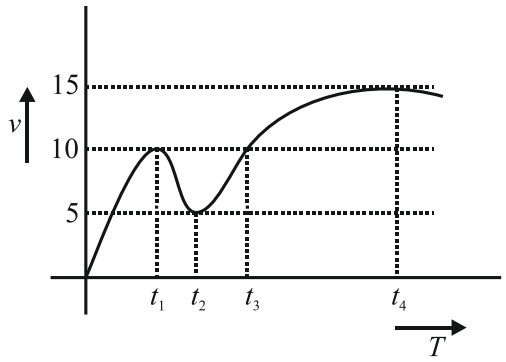
14. Velocity time graph of a particle starting from origin is given below. Choose the correct option for corresponding acceleration and displacement graphs:



(1) II, I (2) III, I

(3) II, IV (4) III, IV

15. velocity time graph of a particle undergoing rectilinear motion is plotted as shown in the figure. Average acceleration of the particle is zero between time intervals:



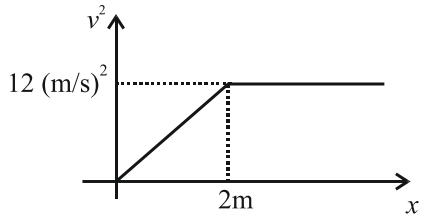
(1) 0 and t_1

(2) t_1 and t_2

(3) t_1 and t_3

(4) t_2 and t_4

16. A particle moving along x-axis, it v^2 and position graph given in the figure. Initial acceleration of the object:



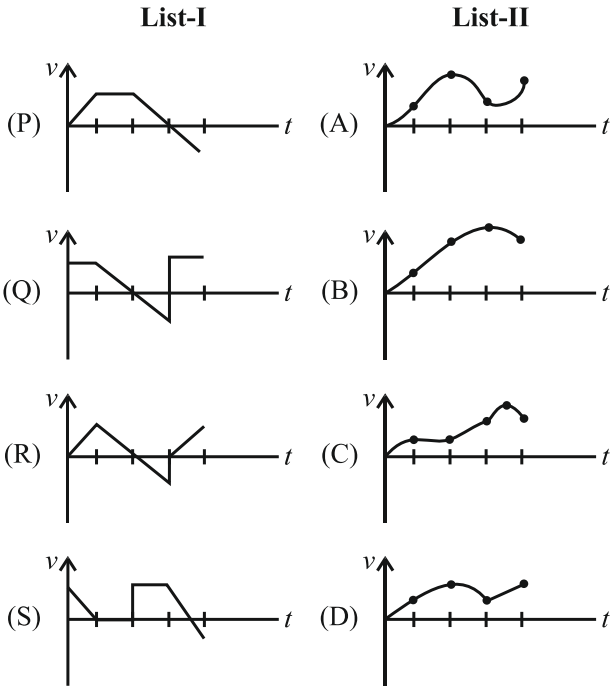
(1) Zero

(2) 6 m/s^2

(3) 4 m/s^2

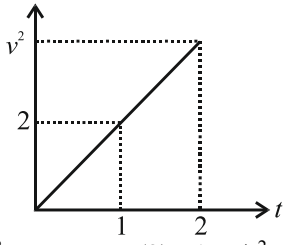
(4) 3 m/s^2

17. Match the v-t graph in List-I with corresponding s-t graphs in List-II. (graphs not to scale)



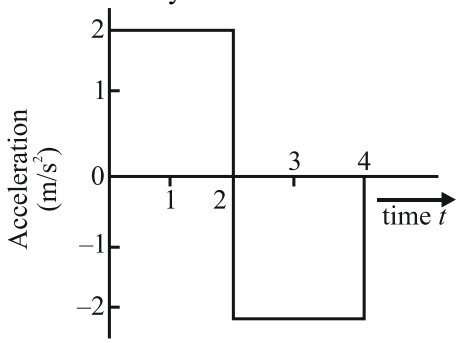
	P	Q	R	S
(1)	B	D	C	A
(2)	B	D	A	C
(3)	A	C	B	D
(4)	C	A	B	D

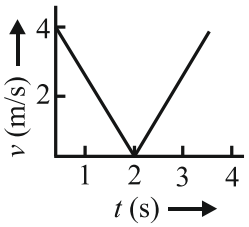
18. A particle moving along x-axis, its velocity at time t is 'v' then its "v^2-t" graph is shown below. Its acceleration at t = 1sec is

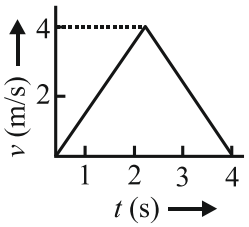


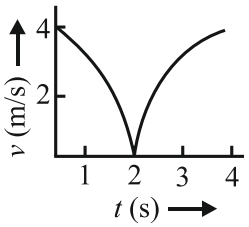
(1) 2 m/s^2 (2) 1 m/s^2
(3) 0.5 m/s^2 (4) 0.7 m/s^2

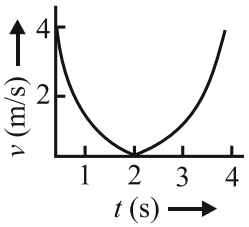
19. A body starts from rest at time t = 0 and undergoes and an acceleration as shown in the graph which one of the following velocity time graphs represents the motion of the body in 4 s:



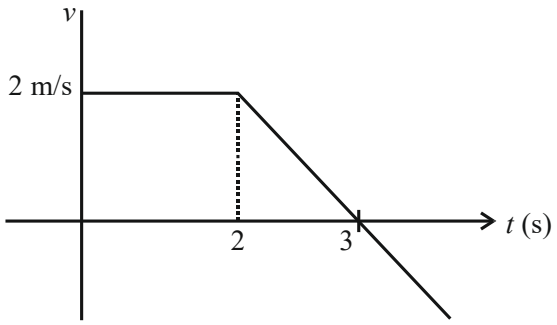
(1)


(2)


(3)


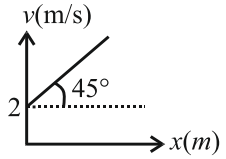
(4)


20. A particle is moving on x-axis. Its velocity-time graph is given in the figure. Find distance travelled by the particle in 5 sec.



(1) 1 m (2) 9 m
(3) 3 m (4) 7 m

21. The velocity (v) of a particle moving along x-axis, varies with its position x as shown in figure. The acceleration 'a' of the particle varies with position as



(1) $a = x + 2$ (2) $a = 2x^2 + 4$
(3) $a = x^2 + 2$ (4) $a = x - 4$

22. The velocity of a particle is given by $v = \sqrt{180 - 16x}$, where x is position in m and v in m/s. Its acceleration will be

(1) –8 m/s^{-2} (2) 5 m/s^{-2}
(3) –8 m/s^{-2} (4) 10 m/s^{-2}

23. A bullet from a gun is fired on a rectangular wooden block with velocity u. When bullet travels 24 cm through the block along its length horizontally, velocity of bullet becomes $u/3$. Then it further penetrates into the block in the same direction before coming to rest exactly at the other end of the block. The total length of the block is **[NEET 2023]**

(1) 24 cm (2) 28 cm
(3) 30 cm (4) 27 cm

24. A particle travels 10m in first 5 sec and 10m in next 3 sec. Assuming constant acceleration what is the distance travelled in next 2 sec

(1) 8.3 m

(2) 9.3 m

(3) 10.3 m

(4) None of these

25. A bike starts from rest and accelerates at 4 m/s^2 for 5s. Then it moves at constant velocity for 25 s, and then decelerates at 2 m/s^2 until it stops, then the total distance that the bike has moved is

(1) 650 m (2) 700 m

(3) 750 m (4) 1000 m

ANSWER KEY

1.	(3)	14.	(3)
2.	(2)	15.	(3)
3.	(4)	16.	(4)
4.	(3)	17.	(2)
5.	(3)	18.	(4)
6.	(3)	19.	(2)
7.	(3)	20.	(2)
8.	(1)	21.	(1)
9.	(1)	22.	(1)
10.	(4)	23.	()
11.	(2)	24.	()
12.	(1)	25.	(1)
13.	(1)		

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

Library- https://smart.link/sdfez8ejd80if