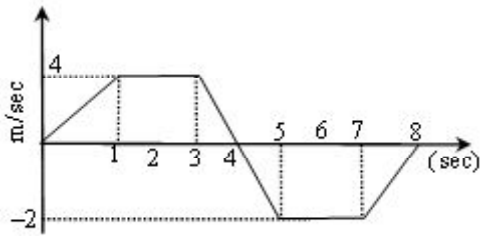
1. The v-t graph of a linear motion is shown in adjoining figure. The distance from origin after 8 seconds is -

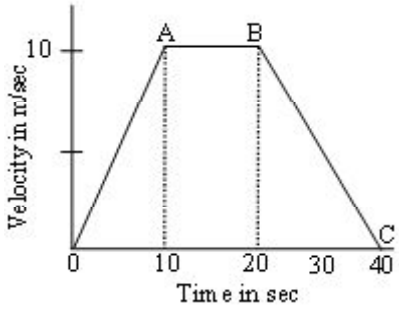


(1) 18 meters (2) 16 meters (3) 8 meters (4) 6 meters

2. A body covers first 1/3 part of its journey with a velocity of 2 m/s, next 1/3 part with a velocity of 3 m/s and rest of the journey with a velocity 6m/s. The average velocity of the body will be

(1) 3 m/s (2) $\frac{11}{3}$m/s (3) $\frac{8}{3}$m/s (4) $\frac{4}{3}$m/s

3. The adjoining curve represents the velocity-time graph of a particle, its acceleration values along OA, AB and BC in metre/sec^2 are respectively-



(1) 1, 0, – 0.5 (2) 1, 0, 0.5 (3) 1, 1, 0.5 (4) 1, 0.5, 0

4. The speed v of a particle moving along a straight line, when it is a distance x from a fixed point on the line is given by $v^2 = 108\ x - 9\ x^2$. Then magnitude of its acceleration when it is at distance 3 meter from the fixed point is-
(1) 9 m/s^2 (2) 18 m/s^2 (3) 27 m/s^2 (4) None of these

5. A body starts from rest and is uniformly accelerated for 30 s. The distance travelled in the first 10s is x_1, next 10 s is x_2 and the last 10 s is x_3. Then $x_1 : x_2 : x_3$ is the same as
(1) 1 : 2 : 4 (2) 1 : 2 : 5 (3) 1 : 3 : 5 (4) 1 : 3 : 9

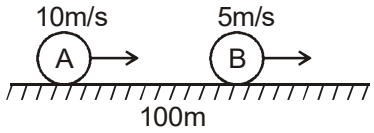
6. Choose the incorrect statement. The particle comes to rest at
(1) t = 0 s (2) t = 5 s (3) t = 8 s (4) None of these

7. If the particle starts from the position $x_0 = -15$ m, then its position at t = 2s will be
(1) – 5m (2) 5m (3) 10 m (4) 15 m

8. Two trains each of length 50 m are approaching each other on parallel rails. Their velocities are 10 m/sec and 15 m/sec. They will cross each other in -
(1) 2 sec (2) 4 sec (3) 10 sec (4) 6 sec

9. A car A is going north-east at 80 km/hr and another car B is going south-east at 60 km/hr. Then the direction of the velocity of A relative to B makes with the north an angle α such that tan α is -
(1) 1/7 (2) 3/4 (3) 4/3 (4) 3/5

10. An object A is moving with 10 m/s and B is moving with 5 m/s in the same direction of positive x-axis. A is 100 m behind B as shown. Find time taken by A to Meet B



(1) 18 sec. (2) 16 sec. (3) 20 sec. (4) 17 sec.

11. A helicopter is flying south with a speed of 50 kmh^{-1}. A train is moving with the same speed towards east. The relative velocity of the helicopter as seen by the passengers in the train will be towards.
(1) north east (2) south east (3) north west (4) south west

12. A swimmer's speed in the direction of flow of river is 16 km h^{-1}. Against the direction of flow of river, the swimmer's speed is 8 km h^{-1}. Calculate the swimmer's speed in still water and the velocity of flow of the river.
(1) 12 km/h, 4 km/h (2) 10 km/h, 3 km/h (3) 10 km/h, 4 km/h (4) 12 km/h, 2 km/h

13. A man is walking on a road with a velocity 3 km/hr. Suddenly rain starts falling. The velocity of rain is 10 km/hr in vertically downward direction. The relative velocity of the rain is -
(1) $\sqrt{13}$ km/hr (2) $\sqrt{7}$ km/hr (3) $\sqrt{109}$ km/hr (4) 13 km/hr

14. It takes one minute for a passenger standing on an escalator to reach the top. If the escalator does not move it takes him 3 minute to walk up. How long will it take for the passenger to arrive at the top if he walks up the moving escalator?
(1) 30 sec (2) 45 sec (3) 40 sec (4) 35 sec

15. A body is thrown up in a lift with a velocity u relative to the lift and the time of flight is found to be t. The acceleration with which the lift is moving up is

(1) $\frac{u-gt}{t}$ (2) $\frac{2u-gt}{t}$ (3) $\frac{u+gt}{t}$ (4) $\frac{2u+gt}{t}$

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[ANSWER KEY]

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