1. A particle is moving in a circle of diameter $5m$. What is the distance covered by it when it completes 3 revolutions?

   (a) $15\pi m$ (b) $10\pi m$ (c) $5\pi m$ (d) $2\pi m$

2. In a long distance race, the athletes were expected to take four rounds of the track such that the line of finish was same as the line of start. Suppose the length of the track was $200m$. Then what is the displacement of the athletes when they touch the finish line?

   (a) zero (b) $3m$ (c) $5m$ (d) $7m$

3. Pick out the correct statement about the motion from the following:

   S_1: If motion is not in straight line, then distance > |displacement|

   S_2: Magnitude of displacement may be equal or less than distance but never greater than distance. distance $\geq$ | displacement |

   S_3: For a moving body, distance cannot have zero or negative values.

   S_4 : If a body travels unequal distance in unequal interval of time, the motion of body is said to be uniform motion,

   (a) S_1 and S_4 (b) S_2 and S_4 (c) S_1 and S_3 (d) S_1, S_2 and S_3

4. A train travels at $60km/h$ for $0.52h$; at $30km/h$ for the next $0.24h$ and at $70km/h$ for the next $0.71h$. What is the average speed of the train?

   (a) $12.5km/h$ (b) $10km/h$ (c) $20km/h$ (d) $59.9km/h$

5. One car moving on a straight road covers one third of the distance with $20km/h$ and the rest with $60km/h$. The average speed is

   (a) $40km/h$ (b) $80km/h$ (c) $46\frac{2}{3}km/h$ (d) $36km/h$.

6. A car completes its journey in a straight line in three equal parts with speeds v_1, v_2 and v_3 respectively. The average speed v is given by

   (a) $\frac{v_1+v_2+v_3}{3}$ (b) $\sqrt{v_1v_2v_3}$ (c) $\frac{1}{v}=\frac{1}{v_1}+\frac{1}{v_2}+\frac{1}{v_3}$ (d) $\frac{3}{v}=\frac{1}{v_1}+\frac{1}{v_2}+\frac{1}{v_3}$.

7. A quantity has a value of $-6.0m/s$. It may be the

   (a) speed of a particle (b) velocity of a particle

   (c) position of a particle (d) displacement of a particle.

8. A train is travelling from west to east at an average speed of $120km/h$. How far does this train travel in 6.0 second?

   (a) $900m$ (b) $500m$ (c) $200m$ (d) $20m$

9. If the initial velocity of an object is equal to final velocity, the value of acceleration is

   (a) positive (b) negative (c) zero (d) infinite.

10. A scooter acquires a velocity of $36km/h$ in 10 seconds just after the start. It takes 20 seconds to stop. Calculate the acceleration in the two cases.

    (a) $1m/s^2, -0.5m/s^2$ (b) $1.1m/s^2, -0.5m/s^2$

    (c) $10m/s^2, 5.0m/s^2$ (d) $-0.6m/s^2, 0.1m/s^2$

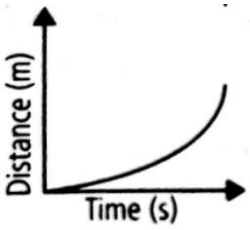
11. A body starts rolling over a horizontal surface with an initial velocity of $0.5m/s$. Due to friction, its velocity decreases at the rate of $0.05m/s^2$. How much time will it take for the body to stop?

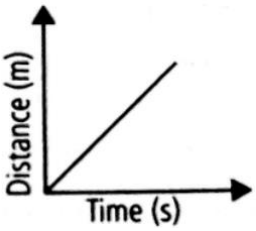
    (a) $10s$ (b) $20s$ (c) $5s$ (d) $10.5s$

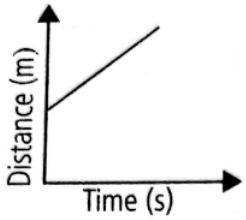
12. If a particle moves with a constant speed, the distance-time graph is a

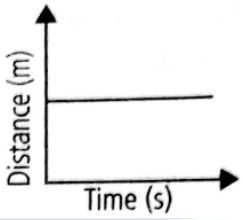
(a) straight line (c) stair-like (b) circle (d) polygon.

13. The nature of the distance-time graph for a car moving with non-uniform speed is

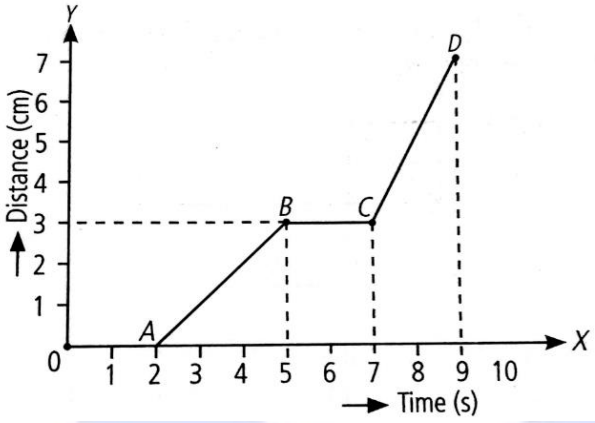
(a) 

(b) 

(c) 

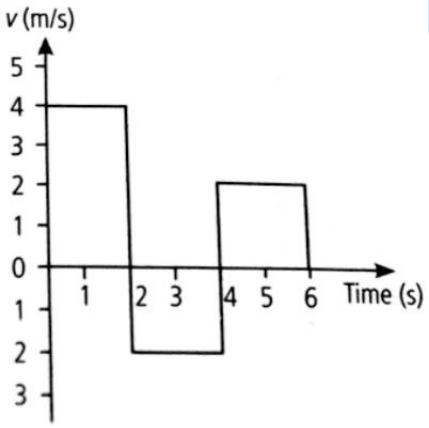
(d) 

14. The graph in figure shows the positions of a body at different times. Calculate the speed of the body as it moves from A to D.



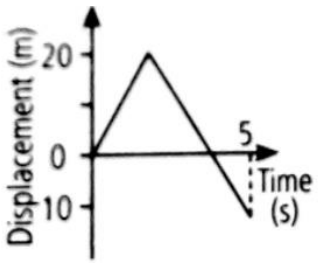
(a) 2cm / s (b) 4cm / s (c) 3cm / s (d) 5cm / s

15. The velocity-time graph of a body moving in a straight line is shown in the figure. The displacement and distance travelled by the body in 6s are respectively



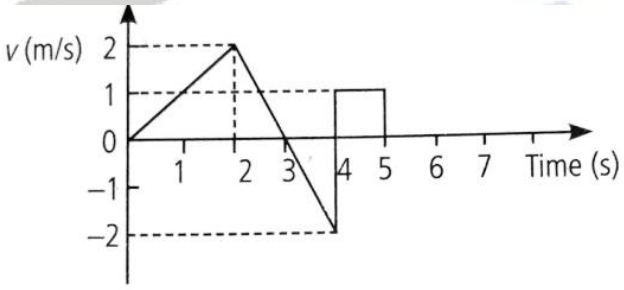
(a) 8m,16m (b) 16m,8m (c) 16m,16m (d) 8m,8m.

16. The diagram shows the displacement-time graph for a particle moving in a straight line. Find the average velocity for the interval from $t = 0$ to $t = 5s$.



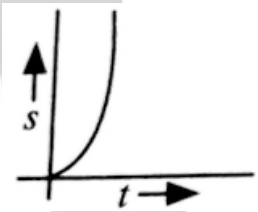
(a) $-2ms^{-1}$ (b) $2ms^{-1}$ (c) $-4ms^{-1}$ (d) $4ms^{-1}$

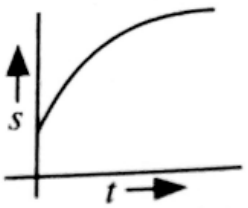
17. The velocity-time graph of a body moving along a straight line is as follows.
The displacement of the body in $5s$ is



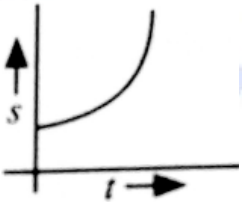
(a) 5m (b) 2m (c) 4m (d) 3m.

18. Which of the following graph is represented by $s = ut + \frac{1}{2}at^2$? Symbols have their usual meanings.

(a)


(b)


(c)


(d)


19. A particle moves with uniform acceleration along a straight line A B. Its velocities at A and B are $2m/s$ and $14m/s$ respectively. M is the mid-point of A B. The particle takes t_1 seconds to go from A to M and t_2 seconds to go from M to B then $t_2 : t_1$ is

(a) 1: 1 (b) 2: 1 (c) 1: 2 (d) 3: 1

20. The speed of a body moving with uniform acceleration is u. This speed is doubled while covering a distance S. When it covers an additional distance S, its speed would become

(a) $\sqrt{3}u$ (b) $\sqrt{5}u$ (c) $\sqrt{11}u$ (d) $\sqrt{7}u$.

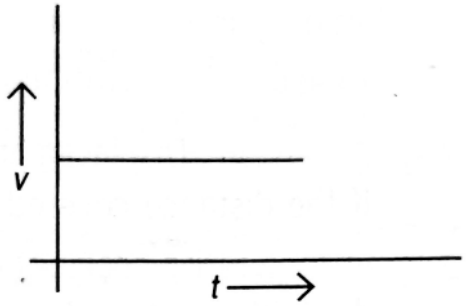
21. Calculate the speed of the tip of second's hand of a watch of length $1.5cm$.

(a) $3.14cm/s$ (b) $0.16cm/s$ (c) $2cm/s$ (d) $0.05cm/s$

22. A body is thrown vertically upward with velocity u, the greatest height h to which it will rise is,

(a) u/g (b) $u^2/2g$ (c) u^2/g (d) $u/2g$.

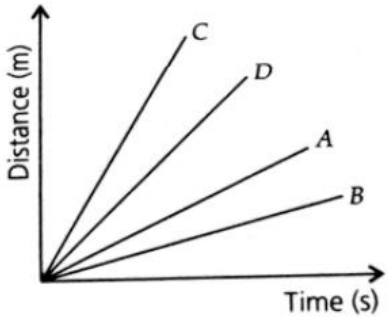
23. From the given $v-t$ graph, it can be inferred that the object is



(a) in uniform motion (b) at rest

(c) in non-uniform motion (d) moving with uniform acceleration.

24. Four cars A, B, C and D are moving on a levelled road. Their distance versus time graphs are shown in figure. Choose the correct statement.

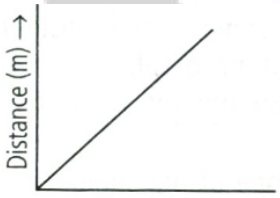


(a) Car A is faster than car D. (b) Car B is the slowest.

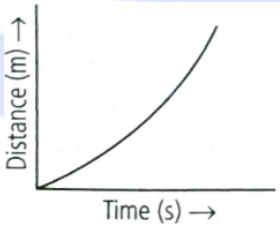
(c) Car D is faster than car C. (d) Car C is the slowest.

25. Which of the following figures represents uniform motion of a moving object correctly?

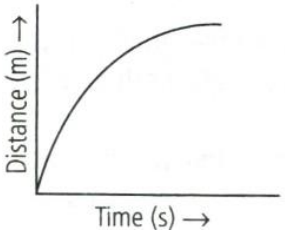
(a)



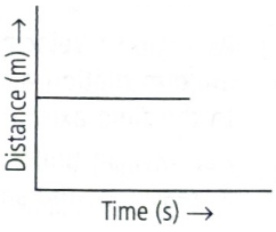
(b)



(c)



(d)



26. In which of the following cases of motions, the distance moved and the magnitude of displacement are equal?

(a) If the car is moving on straight road. (b) If the car is moving in circular path.

(c) The pendulum is moving to and fro. (d) The earth is revolving around the sun.

Assertion-Reason Codes:

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true and Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If both Assertion and Reason are false.

27. Assertion: An object may acquire acceleration even if it is moving at a constant speed.

Reason: With change in the direction of motion, an object can acquire acceleration.

28. Assertion: Velocity versus time graph of a particle in uniform motion along a straight path is a line parallel to the time axis.

Reason: In uniform motion the velocity of a particle increases as the square of the time elapsed.

29. Assertion: The speedometer of a car measures the instantaneous speed of the car.

Reason: Average speed is equal to the total distance covered by an object divided by the total time taken.

30. Assertion: Motion with uniform velocity is always along a straight line path.

Reason: In uniform velocity a motion, speed is the magnitude of the velocity and is equal to the instantaneous velocity.

31. Assertion: If a particle is moving with constant velocity, then average velocity for any time interval is equal to instantaneous velocity.

Reason: If average velocity of a particle moving on a straight line is zero for a given time interval, then instantaneous velocity at some instant within this interval may be zero.

32. Assertion: A particle can have acceleration even, if its velocity is zero at an instant.

Reason: Acceleration is the rate of change of velocity.

33. Assertion: The graph between two physical quantities P and Q is straight line, when P/Q is constant.

Reason: The straight line graph means that P is proportional to Q or P is equal to constant multiplied by Q.