Yakeen NEET 2.0 2026

MahaManthan ASSIGNMENT
## Motion in a Straight Line

Assignment-01
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1. Path length is a scalar quantity, it has magnitude only and no direction. A scalar quantity can be negative also. **True/False**

2. The magnitude of displacement may not be equal to path length traversed by the object. Magnitude of displacement may be greater than path length traversed. **True/False**

3. Average speed does not tell in what direction object is moving but it tells about the type of path followed by the object. **True/False**

4. Average speed may not be equal to magnitude of average velocity, and average speed during motion of the object is non-zero. **True/False**

5. For uniform motion, velocity is same as the average velocity at all instants and magnitude of instantaneous velocity is equal to instantaneous speed at that instant. **True/False**

6. On a plot of velocity versus time, the average acceleration is the slope of straight line connecting points with initial velocity to final velocity. **True/False**

7. Position-time graph with positive acceleration curves upward, downwards for negative acceleration and is a straight line for zero acceleration. **True/False**

8. An object moving along negative direction on a straight line with negative acceleration is slowing down. **True/False**

9. Area under curve for graph between velocity-time gives the distance covered over a given interval of time. **True/False**

10. Acceleration and velocity cannot change values abruptly at an instant, changes are always continuous. **True/False**

11. In case of constant acceleration, average velocity is equal to arithmetic mean of initial and final velocities. **True/False**

12. The origin and positive direction of an axis in one dimensional motion is a matter of choice. You should first specify this point before you assign signs to quantities like displacement and velocity. **True/False**

13. If a particle is speeding up along a straight line then acceleration can be either in same direction or in opposite direction of motion. **True/False**

14. The zero velocity at any instant does not necessarily imply zero acceleration al that instant. A particle may be momentarily at rest and yet have non-zero acceleration. **True/False**

15. The kinematic equations of motion are true only for motion in which magnitude and direction of acceleration are constant during the course of motion. **True/False**

16. An object is released from great height and moves towards earth. If during fall, gravity disappears, object will stop its further motion. **True/False**

17. An object in motion under constant acceleration always covers distance in ratio 1 : 3 : 5 in equal intervals of time. **True/False**

18. An object thrown vertically upwards with speed greater than 9.8 m/s always cover a distance of 4.9 m during last second of upward journey. **True/False**

19. Two objects are projected up from edge of a cliff with initial velocities v and $2v$. The graph showing time variation of relative position of second object with respect to first will be a straight line. **True/False**

20. Two trains moving along straight tracks in same direction take loss time to pass each other than to cross each other moving in opposite direction.

True/False

21. A motor car is going due north at a speed of 50 km/h. It makes a 90° left turn without changing the speed. The change in the velocity of the car is about
(1) 50 km/h towards west
(2) 70 km/h towards south-west
(3) 70 km/h towards north-west
(4) zero

22. Figures shows the displacement-time graph of a particle moving on the x-axis.
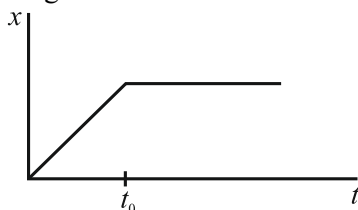
(1) the particle is continuously going in positive x-direction
(2) the particle is at rest
(3) the velocity increases up to a time t_0, and then becomes constant.
(4) the particle moves at a constant velocity up to a time t_0, and then stops.

23. A particle has a velocity u towards east at $t = 0$. Its acceleration is towards west and is constant. Let x_A and x_B be the magnitude of displacements in the first 10 seconds and the next 10 seconds.
(1) $x_A < x_B$
(2) $x_A = x_B$
(3) $x_A > x_B$
(4) the information is insufficient to decide the relation of x_A and x_B.

24. A person travelling on a straight line moves with a uniform velocity v_1 for some time and with uniform velocity v_2 for the next equal time. The average velocity v is given by
(1) $v = \dfrac{v_1 + v_2}{2}$
(2) $v = \sqrt{v_1 v_2}$
(3) $\dfrac{2}{v} = \dfrac{1}{v_1} + \dfrac{1}{v_2}$
(4) $\dfrac{1}{v} = \dfrac{1}{v_1} + \dfrac{1}{v_2}$

25. A person travelling on a straight line moves with a uniform velocity v_1 for a distance x and with uniform velocity v_2 for the next equal distance. The average velocity v is given by
(1) $v = \dfrac{v_1 + v_2}{2}$
(2) $v = \sqrt{v_1 v_2}$
(3) $\dfrac{2}{v} = \dfrac{1}{v_1} + \dfrac{1}{v_2}$
(4) $\dfrac{1}{v} = \dfrac{1}{v_1} + \dfrac{1}{v_2}$

26. Consider the motion of the tip of the minute hand of a clock. In one hour
(1) the displacement is zero
(2) the distance covered is zero
(3) the average speed is zero
(4) the average velocity is zero

27. A particle moves along the x-axis as
$x = u(t - 2\text{s}) + a(t - 2\text{s})^2$.
(1) the initial velocity of the particle is u
(2) the acceleration of the particle is a
(3) the acceleration of the particle is $2a$
(4) at $t = 2\text{s}$ particle is at the origin.

28. Pick the correct statements:
(1) Average speed of a particle in a region time is never less than magnitude of the average velocity.
(2) It is possible to have a situation in which $\left|\dfrac{d\vec{v}}{dt}\right| \neq 0$ but $\dfrac{d}{dt}|\vec{v}| = 0$.
(3) The average velocity of a particle is zero in a time interval. It is possible that the instantaneous velocity is never zero in the interval.
(4) The average velocity of a particle moving on a straight line is zero in a time interval. It is possible that the instantaneous velocity is never zero in the interval. (Infinite accelerations are not allowed)

29. An object may have

(1) varying speed without having varying velocity

(2) varying velocity without having varying speed

(3) non-zero acceleration without having varying velocity.

(4) non-zero acceleration without having varying speed.

30. Mark the correct statements for a particle going on a straight line.

(1) If the velocity and acceleration have opposite sign, the object is slowing down.

(2) If the position and velocity have opposite sign, the particle is moving towards the origin.

(3) If the velocity is zero at an instant, the acceleration should also be zero at that instant.

(4) If the velocity is zero for a time interval, the acceleration is zero at any instant withing the time interval.

31. The velocity of a particle is zero at $t = 0$

(1) The acceleration at $t = 0$ must be zero.

(2) The acceleration at $t = 0$ may be zero.

(3) If the acceleration is zero from $t = 0$ to $t = 10$ s, the speed is also zero in this interval.

(4) If the speed is zero from $t = 0$ to $t = 10$ s, the acceleration is also zero in this interval.

32. Mark the correct statements:

(1) The magnitude of the velocity of a particle is equal to its speed.

(2) The magnitude of average velocity in an interval is equal to its average speed in that interval.

(3) It is possible to have situation in which the speed of a particle is always zero but the average speed is not zero.

(4) It is possible to have a situation in which the speed of the particle is never zero but the average speed in an interval is zero.

33. The velocity-time plot for a particle moving on a straight line is shown in the figure.
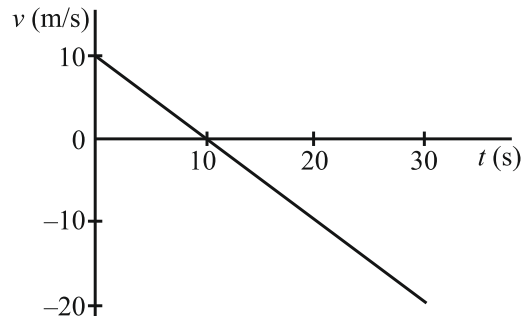
(1) The particle has a constant acceleration.

(2) The particle has never turned around.

(3) The particle has zero displacement.

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

34. Figure shows the position of a particle moving on the x-axis as a function of time.
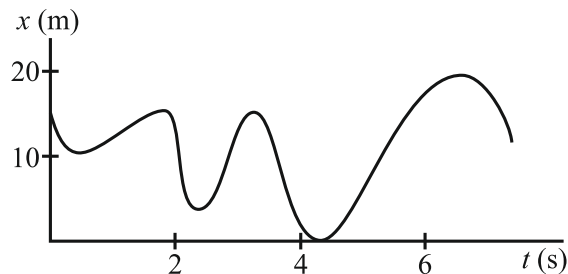
(1) The particle has come to rest 6 times.

(2) The maximum speed is at $t = 6$s.

(3) The velocity remains positive for $t = 0$ to $t = 6$s.

(4) The average velocity for the total period shown is negative.

ANSWER KEY

1.	(True)	18.	(True)
2.	(False)	19.	(False)
3.	(False)	20.	(False)
4.	(True)	21.	(2)
5.	(True)	22.	(4)
6.	(True)	23.	(4)
7.	(True)	24.	(1)
8.	(False)	25.	(4)
9.	(False)	26.	(1, 4)
10.	(True)	27.	(3, 4)
11.	(True)	28.	(1, 2, 3)
12.	(True)	29.	(2, 4)
13.	(False)	30.	(1, 2, 4)
14.	(True)	31.	(2, 3, 4)
15.	(True)	32.	(1)
16.	(False)	33.	(1, 4)
17.	(False)	34.	(1)

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

Library- https://smart.link/sdfez8ejd80if