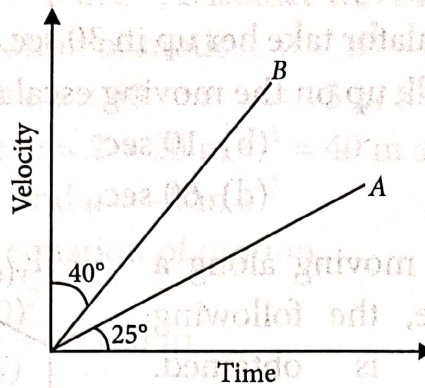7. The velocity – time graph for two bodies A and B are shown. Then the acceleration of A and B are in the ratio

(a) tan25° to tan50° (b) cos25° to cos50°
(c) tan25° to tan40° (d) sin25° to sin50°   (2015)

8. A body falls freely for 10 sec. Its average velocity during this journey (take $g = 10$ m s^{-2})
   (a) 100 m s^{-1} (b) 10 m s^{-1}
   (c) 50 m s^{-1} (d) 5 m s^{-1} (2016)

9. A car moving with a velocity of 20 m s^{-1} is stopped in a distance of 40 m. If the same car is travelling at double the velocity, the distance travelled by it for same retardation is
   (a) 640 m   (b) 320 m
   (c) 1280 m   (d) 160 m   (2017)

10. A particle shows distance-time curve as shown in the figure. The maximum instantaneous velocity of the particle is around the point
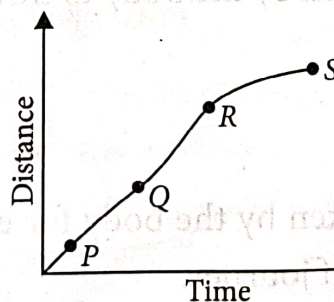
(a) P (b) S (c) R (d) Q (2018)

11. The given graph shows the variation of velocity (v) with position (x) for a particle moving along a straight line. Which of the following graph shows the variation of acceleration (a) with position (x)?

(a)

(b)

(c)

(d)
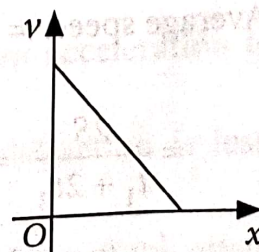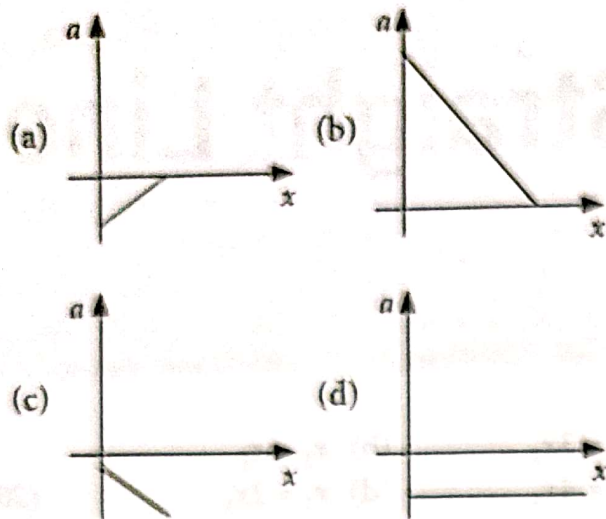
(2019)

12. At a metro station, a girl walks up a stationary escalator in 20 sec. If she remains stationary on the escalator, then the escalator take her up in 30 sec. The time taken by her to walk up on the moving escalator will be

(a) 12 sec
(b) 10 sec
(c) 25 sec
(d) 60 sec
(2020)

13. For a body moving along a straight line, the following v-t graph is obtained. According to the graph, the displacement during
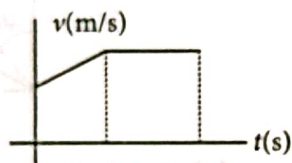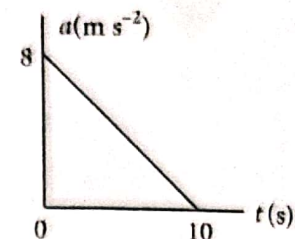
(a) uniform acceleration is greater than that during uniform motion.
(b) uniform acceleration is less than that during uniform motion.

(c) uniform acceleration is equal to that during uniform motion.
(d) uniform motion is zero.
(2021)

14. A particle starts from rest. Its acceleration a versus time t is shown in the figure. The maximum speed of the particle will be

(a) 80 m s^{-1}
(b) 40 m s^{-1}
(c) 18 m s^{-1}
(d) 2 m s^{-1}
(2021)

15. The displacement 'x' (in metre) of a particle having mass 'm' (in kg) moving in one dimension under the action of a force, is related to time 't' (in sec) by, $t = \sqrt{x} + 3$. The displacement of the particle when its velocity is zero, will be

(a) 6 m
(b) 4 m
(c) 2 m
(d) 0 m
(2022)

16. A body is moving along a straight line with initial velocity v_0. Its acceleration a is constant. After t seconds, its velocity becomes v. The average velocity of the body over the given time interval is

(a) $\bar{v} = \dfrac{v^2 - v_0^2}{at}$
(b) $\bar{v} = \dfrac{v^2 + v_0^2}{2at}$

(c) $\bar{v} = \dfrac{v^2 + v_0^2}{at}$
(d) $\bar{v} = \dfrac{v^2 - v_0^2}{2at}$
(2023)

ANSWER KEY