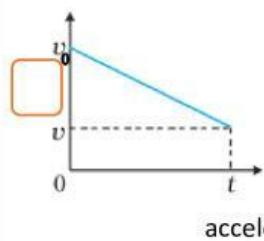


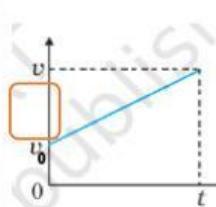
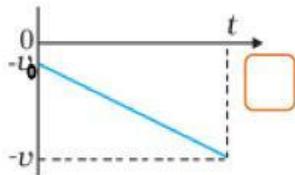
MOTION (1 D & 2 D) WORKSHEET - 2

Q1) Velocity-time graph for motions with constant acceleration given below match the graphs with appropriate statements given below.



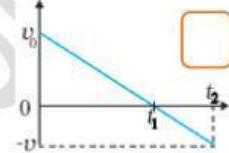
(a) Motion in positive direction with positive acceleration

(b) Motion in positive direction with negative acceleration



(c) Motion in negative direction with negative acceleration

(d) Motion of an object with negative acceleration that changes direction at time t_1 .



Q2) **Stopping distance of vehicles:** When brakes are applied to a moving vehicle, the distance it travels before stopping is called stopping distance. It is an important factor for road safety and depends on the initial velocity (v_0) and the braking capacity, or deceleration, $-a$ that is caused by the braking.

Choose the correct statements in the above context



- The stopping distance is proportional to the square of the initial velocity.
- The stopping distance is proportional to the twice of its initial velocity.
- Initial velocity increases the stopping distance by a factor of 6 for the same deceleration.
- Initial velocity increases the stopping distance by a factor of 4 for the same deceleration.

Q3) An elevator car, whose floor to ceiling distance is equal to 2.7m, starts ascending with constant acceleration of 1.2 ms^{-2} . 2sec after the start, a bolt begins falling from the ceiling of the car. The free fall time of the bolt is

- a) $\sqrt{0.54}$ s
- b) $\sqrt{6}$ s
- c) 0.7 s
- d) 1 s