CBSE

MOTION IN A STRAIGHT LINE WS 10

Class 11 - Physics

Section A

1. A stone falls freely under gravity. It covers distances h_1, h_2 and h_3 in the first 5 seconds, the next 5 seconds and the next 5 seconds respectively. The relation between h_1, h_2 and h_3 is: **[1]**

   a) $h_1 = \frac{h_2}{3} = \frac{h_3}{5}$

   b) $h_1 = 2h_2 = 3h_3$

   c) $h_1 = h_2 = h_3$

   d) $h_1 = 3h_1$ and $h_3 = 3h_2$

Section B

2. Two trains A and B, each of length 100 m, are running on parallel tracks. One overtakes the other in 20 s and one crosses the other in 10 s. Calculate the velocities of each train. **[2]**

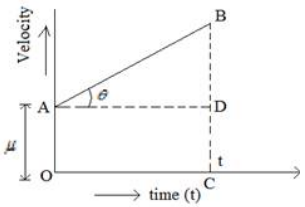
3. An electron travelling with a speed of 5×10^3 ms^{-1} passes through an electric field with an acceleration of 10^{12} ms^{-2}. **[2]**

   i. How long will it take for the electron to double its speed?

   ii. What will be the distance covered by the electron in this time?

4. A car moving on a straight highway with speed of 126km/hr. is brought to stop within a distance of 200m. What is the retardation of the car (assumed uniform) and how long does it take for the car to stop? **[2]**

5. A balloon is ascending at the rate of 4.9 m/s. A packet is dropped from the balloon when situated at a height of 245 m. How long does it take the packet to reach the ground? What is its final velocity? **[2]**

Section C

6. Establish $s = ut + \frac{1}{2}at^2$ from velocity-time graph for a uniform accelerated motion? **[3]**