

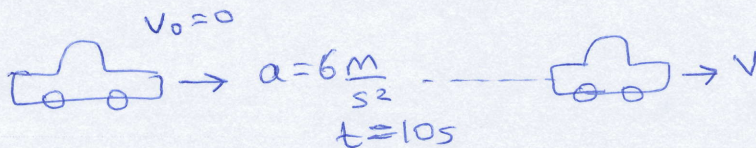
KEY Mechanics - Quiz - Group A Dec - 2018

Ful Name:

Question 1 (2 marks)

A car initially at rest starts to move with a constant acceleration of 6 m/s^2 . If it accelerates for 10 seconds,

a) Draw the figure of the motion.



b) Write down the equations.

$$\Delta x = v_0 t + \frac{1}{2} a t^2 \quad v_{\text{avg}} = \frac{v_f + v_0}{2}$$

$$v_f = v_0 + a t$$

$$v_f^2 = v_0^2 + 2 a \Delta x$$

c) How far will it move during this time?

$$\Delta x = v_0 t + \frac{1}{2} a t^2 \quad t = 10 \text{ s}$$

$$\Delta x = 0 \cdot t + \frac{1}{2} 6 (10)^2 = \frac{600}{2} = 300 \text{ m}$$

d) What will be its final velocity?

$$v_f = v_0 + a t = 0 + 6 \cdot 10 = 60 \frac{\text{m}}{\text{s}}$$

e) What is the average velocity of the car during this motion?

$$v_{\text{avg}} = \frac{v_0 + v_f}{2} = \frac{0 + 60}{2} = 30 \text{ m/s}$$

- OR -

$$v_{\text{avg}} = \frac{\Delta x}{\Delta t} = \frac{300 \text{ m}}{10 \text{ s}} = 30 \text{ m/s}$$