

**Mathematics Questions by Topics**

Motion and Force

Question 32

Source: K11SM2Q18

**Question 32**

A body of mass  $m$  kg moves in a straight line, its velocity is  $v \text{ ms}^{-1}$  at a time  $t$  seconds. The force acting on the body is  $f(t)$  newtons.

Given that  $v = v_1$  when  $t = t_1$  and  $v = v_2$  when  $t = t_2$ , it follows that

- A.  $mv_2 - mv_1 = f(t_2) - f(t_1)$
- B.  $mv_2 - mv_1 = \int_{t_1}^{t_2} f(t) dt$
- C.  $v_2 - v_1 = m \int_{t_1}^{t_2} f(t) dt$
- D.  $\frac{1}{2}mv_2^2 - \frac{1}{2}mv_1^2 = f(t_2) - f(t_1)$
- E.  $\frac{1}{2}mv_2^2 - \frac{1}{2}mv_1^2 = \int_{t_1}^{t_2} f(t) dt$