

Kinematics

5

Ex 5 A body starting from rest acquires a velocity of 10 ms^{-1} in 5 secs. Calculate (a) the acceleration
(b) the distance covered by the body in 5 seconds.

DATA :-

$$\text{Initial velocity} = 0 \text{ ms}^{-1}$$

$$\text{Final velocity} = 10 \text{ ms}^{-1}$$

$$\text{Time taken} = 5 \text{ secs}$$

(a) Acceleration = ?

(b) Distance = $S = ?$

SOLUTION :-

$$(a) \quad a = \frac{v_f - v_i}{t}$$

$$a = \frac{10 - 0}{5}$$

$$a = \frac{10}{5}$$

$$a = 2 \text{ ms}^{-2}$$

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$$(b) \quad 2as = v_f^2 - v_i^2$$

$$S = \frac{v_f^2 - v_i^2}{2a}$$

$$S = \frac{(10)^2 - (0)^2}{2(2)}$$

$$S = \frac{100}{4}$$

$$S = 25 \text{ m}$$