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kinematics

3.8 A bus is moving with a velocity of 72 kmh^{-1} . On the application of brakes it stops after covering a distance of 500 m . Calculate the deceleration produced by the brakes.

DATA:-

$$\begin{aligned}\text{Initial Velocity} &= 72 \text{ kmh}^{-1} \\ &= \frac{72 \times 1000}{3600} \\ &= 20 \text{ ms}^{-1}\end{aligned}$$

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

$$\text{Acceleration} = ?$$

$$\text{Distance} = 500 \text{ m}$$

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SOLUTION:-

$$2as = v_f^2 - v_i^2$$

$$a = \frac{v_f^2 - v_i^2}{2(s)}$$

$$a = \frac{(0)^2 - (20)^2}{2(500)}$$

$$a = \frac{400}{1000}$$

$$a = 0.4 \text{ ms}^{-2}$$