

If greatest admissible acceleration of a train is 3 feet per second square, calculate the least time taken from one station to another at a distance of 10m.

It takes minimal time for the train to go from one station to another if train accelerates at the first half of distance and decelerates at the second half.

Time for half distance equals:

$$\frac{l}{2} = \frac{at^2}{2} \Rightarrow t = \sqrt{l/a}$$

Total time equals:

$$T = 2t = 2\sqrt{l/a} = 4.67 \text{ sec}$$

Answer:  $T = 4.67 \text{ seconds}$