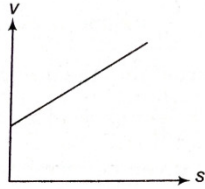


QUES 5

Corresponding to given  $v$ - $s$  graph of a particle moving in a straight line, plot  $a$ - $s$  graph.



**Solution** The given  $v$ - $s$  graph is a straight line with positive slope (say  $m$ ) and positive intercept (say  $c$ ). Therefore,  $v$ - $s$  equation is

$$v = ms + c$$

$\Rightarrow$

$$\frac{dv}{ds} = m$$

Now,

$$a = v \cdot \frac{dv}{ds} = (ms + c)(m)$$

$$a = m^2s + mc$$

$a$ - $s$  equation is a linear equation. Therefore,  $a$ - $s$  graph is also a straight line with positive slope ( $= m^2$ ) and positive intercept ( $= mc$ ).  $a$ - $s$  graph is as shown below.

