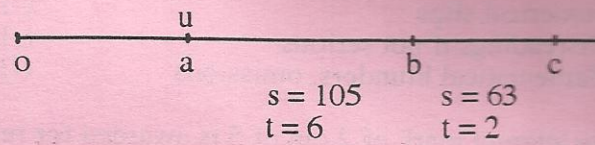


1996

1 (a)



Stage ab $105 = u(6) + 0.5f(36)$ 5

Stage ac $168 = u(8) + 0.5f(64)$ 5

$f = 3.5$ 5

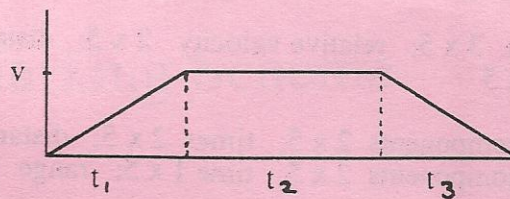
$u = 7$

Stage oa $v^2 = u^2 + 2fs$

$49 = 0 + 2(3.5)s$ 5

$s = 7$ 5 25

(b)



$t_1 = \frac{v}{4}$

$t_3 = \frac{v}{4}$ 5

$t_2 = t - t_1 - t_3 = t - \frac{v}{2}$ 5

$d = 0.5t_1v + t_2v + 0.5t_3v$
 $= \frac{v^2}{8} + (t - \frac{v}{2})v + \frac{v^2}{8}$ 5

$\Rightarrow v^2 - 4vt + 4d = 0$

$v = 2t \pm 2\sqrt{t^2 - d}$

$\Rightarrow t_2 = t - \frac{v}{2} = \sqrt{t^2 - d}$ 5 25