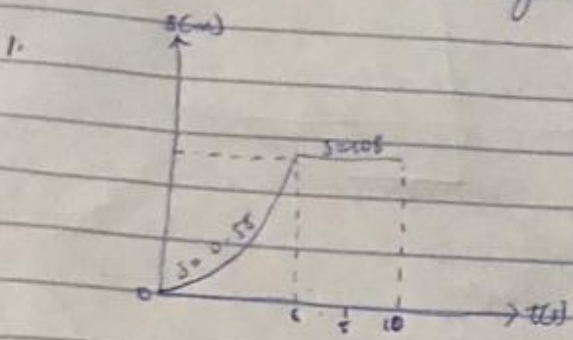


AMOLEMOI Ennattalazh Osare
 18/eng of 155
 Electrical Electronics Engineering



$$v = \frac{ds}{dt}$$

$$v = 1.5t^2$$

at $t = 6s$

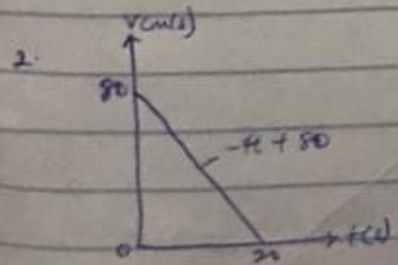
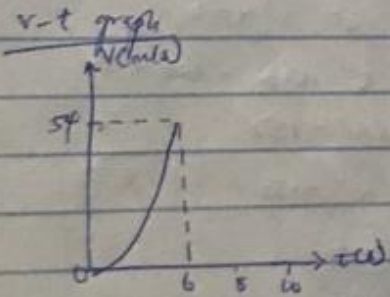
$$v = 1.5 \times 6^2$$

$$= 1.5 \times 36$$

$$v = 54 \text{ m/s}$$

from $t = 6s - 10s$; $s = 36m$

$$\therefore v = 0$$



1.

$$s = \int v dt$$

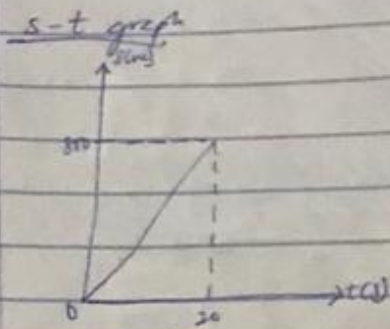
$$s = \int (-4t + 80) dt$$

$$s = -2t^2 + 80t$$

at $t = 20s$

$$s = -2(20)^2 + 80(20)$$

$$s = 1600 - 800 = 800m$$

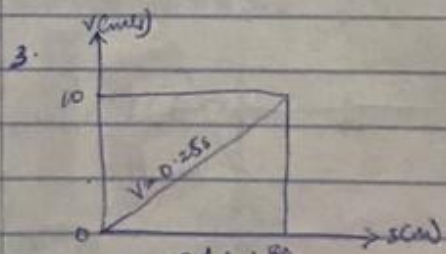
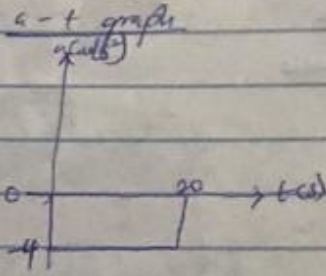


ii. acceleration

$$a = \frac{dv}{dt}$$

$$\therefore a = -4 \text{ m/s}^2$$

at $t = 20s$, $a = -4 \text{ m/s}^2$



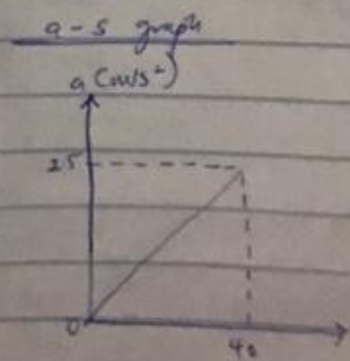
$$a = \left(\frac{dv}{ds}\right)v$$

$$v = 0.25s$$

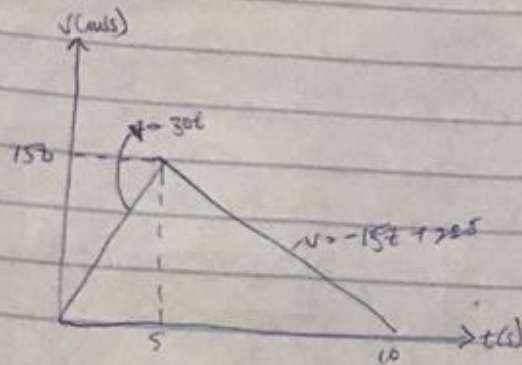
$$a = 10 \times \frac{d(0.25s)}{ds}$$

$$a = 10 \times 0.25$$

$$a = 2.5 \text{ m/s}^2$$



6.



$$0 \leq t \leq 5$$

$$v = 30t$$

$$\int_0^5 v dt = \int_0^5 30t dt$$

$$s = 15t^2 \Big|_0^5$$

$$s = 15 \times 25$$

$$s = 375 \text{ m}$$

$$5 \leq t \leq 15$$

$$v = -15t + 225$$

$$\int_{375}^s v dt = \int_5^{15} (-15t + 225) dt$$

$$s - 375 = \frac{-15t^2 + 225t}{2} \Big|_5^{15}$$

$$s - 375 = \left[\frac{-15(15^2) + 225(15)}{2} \right] - \left[\frac{-15(5^2) + 225(5)}{2} \right]$$

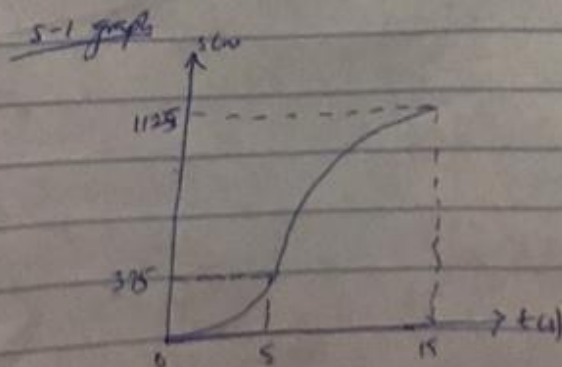
$$s - 375 = \left[\frac{-15 \times 225 + 3375}{2} \right] - \left[\frac{-15 \times 25 + 1125}{2} \right]$$

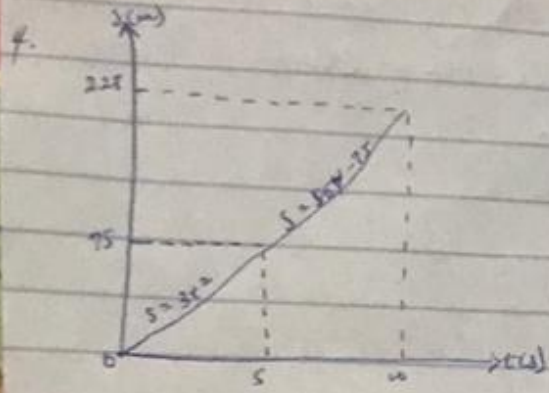
$$s - 375 = (-1687.5 + 3375) - (-187.5 + 1125)$$

$$s - 375 = +1687.5 - 937.5$$

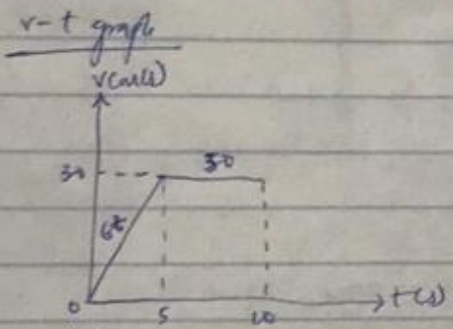
$$s - 375 = 750$$

$$s = 1125 \text{ m}$$

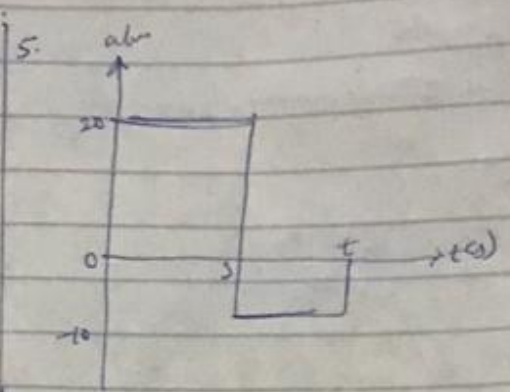
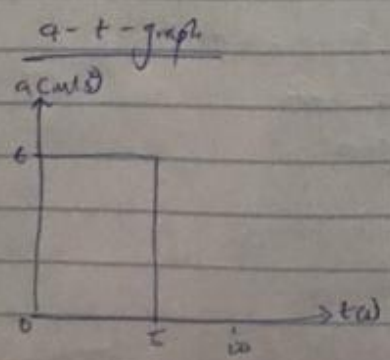




i. $v = ds/dt$
 at $t = 5s$
 $v = 6t = 6 \times 5$
 $= 30 \text{ m/s}$
 at $t = 10s$
 $v = 30 \text{ m/s}$



ii. $a = dv/dt$
 at $t = 5s$
 $a = 6 \text{ m/s}^2$
 at $t = 10s$
 $a = 0 \text{ m/s}^2$



i. $v = \int a dt$
 $v = \int 20 dt$
 $v = 20t$
 at $t = 5s$
 $v = 20 \times 5 = 100 \text{ m/s}$
 $5s < t < 10s$
 $\int v dt = \int 0 dt = 0$
 $v - 100 = -10t + 100$
 $v - 100 = -10t' + 50$
 at $t', v = 0$
 $0 - 100 = -10t' + 50$
 $10t' = 150$
 $t' = 15s$

