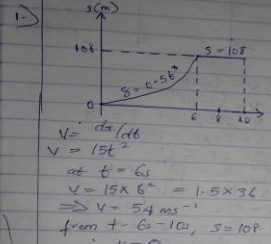
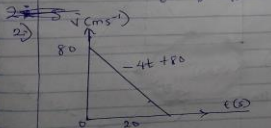
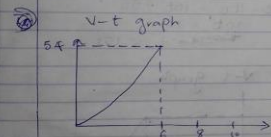


SARIKI MOBELE
 CIVIL ENG
 18 ENL 6031054



$v = \frac{ds}{dt}$
 $v = 15t$
 at $t = 6s$
 $v = 15 \times 6 = 1.5 \times 36$
 $\Rightarrow v = 54 \text{ ms}^{-1}$
 from $t = 6 - 10s$, $s = 10m$
 $\therefore v = 0$

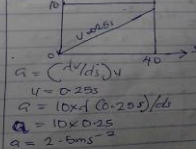
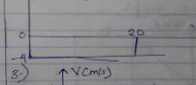


$s = \int v dt$
 $s = \int_0^6 (15t) dt + \int_6^{10} 54 dt$
 $s = 2.25t^2 + 54t$

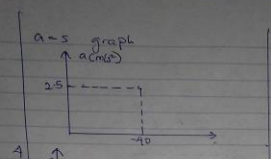
at $t = 20s$
 $s = -2(20)^2 + 8t(20)$
 $s = 1600 - 800 = 800m$



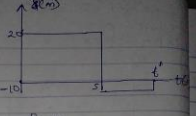
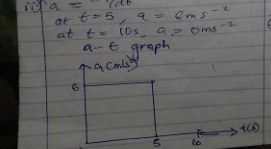
Acceleration
 $a = \frac{dv}{dt}$
 $\therefore a = -4 \text{ ms}^{-1}$
 at $t = 20$, $a = -4 \text{ ms}^{-2}$



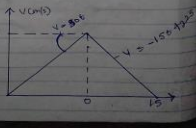
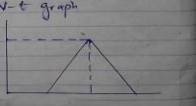
$a = \frac{dv}{ds} \cdot v$
 $v = 0.25s$
 $a = 10 \times 0.25$
 $a = 2.5 \text{ ms}^{-2}$



$v = \frac{ds}{dt}$
 at $t = 5s$
 $v = 6t = 6 \times 5 = 30 \text{ ms}^{-1}$
 at $t = 10s$
 $v = 30 \text{ ms}^{-1}$



$v = \int a dt$
 $v = \int 20 dt$
 $v = 20t$, at $t = 5s$
 $v = 20 \times 5 = 100 \text{ ms}^{-1}$
 $5s < t \leq 10s$
 $\int_{100}^{0} dv = \int_{0}^{t} -10 dt$
 $v - 100 = -10t + 10$
 $v - 100 = -10t + 10$
 $v = 100 - 10t + 10$
 at $t = 10s$, $v = 0$
 $0 - 100 = 10t + 10$
 $10t = -110$
 $t = -11s$



$0 \leq t \leq 5$
 $v = 30t$
 $\int_0^5 ds = \int_0^5 30t dt$
 $s = 15t^2 \Big|_0^5$
 $s = 15(5)^2 - 15(0)^2$
 $s = 15 \times 25 = 375m$
 $5 \leq t \leq 15$
 $v = -15t + 225$
 $\int_{375}^s ds = \int_5^{15} (-15t + 225) dt$
 $s - 375 = \left[-\frac{15t^2}{2} + 225t \right]_5^{15}$
 $s - 375 = \left[\frac{-15(15)^2}{2} + 225(15) \right] - \left[\frac{-15(5)^2}{2} + 225(5) \right]$
 $s - 375 = \left[\frac{-15 \times 225}{2} + 3375 \right] - \left[\frac{15 \times 25}{2} + 1125 \right]$
 $s - 375 = (1687.5 + 3375) - (187.5 + 1125)$
 $s - 375 = 1687.5 - 937.5$
 $s - 375 = 750$
 $s = 1125m$