CSE350

TOPIC NAME : Shihab Muhtasim DAY: ID: 2130161 0

TIME : sec 11 DATE: / /

Given,

$C = 1mf = 0.001\ f$

$R = 1\ k\Omega = 10^3\ \Omega$

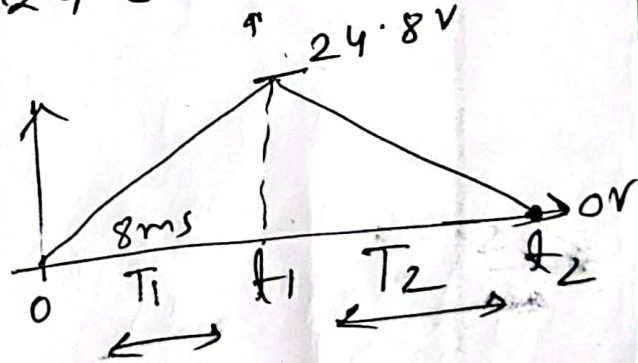
$v_a = 3.1\ v$

① time to reach 111 $\Rightarrow t_1 = 8\ ms$

$$v' = -\frac{1}{RC} * \int_0^8 v_a\, dt$$

$$= \frac{v_a}{RC}[t]_0^8$$

$$= 3.1\,[8] = 24.8\ v$$



② Now,

$$y=0v = -\frac{1}{RC}\int_{t_1}^{t_2} v_{ref}\, dt + v'$$

$t_2 - t_1 = T_2$

$$0 = -\frac{v_{ref}}{RC} \cdot T_2 + 24.8$$

$$\Rightarrow \frac{2}{10^3 \times 0.001} \times T_2 = 24.8$$

$\Rightarrow T_2 = 12.4\ ms$

∴ This encoder can count upto 8 ms

∴ encoded = 111

GOOD LUCK