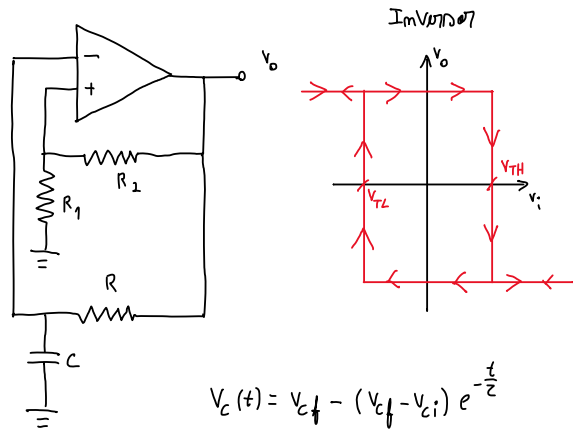


- a) $V_{CC} = 5V$
 $R_2 = 20k\Omega$
 $R_1 = 5k\Omega$
 $C = 10\mu F$



$$\beta = \frac{R_1}{R_2 + R_1}$$

$$V_{TH} = \beta V_{CC} = 1V$$

$$V_{TL} = -\beta V_{CC} = -1V$$

$$V_c(t) = V_{cf} - (V_{cf} - V_{ci}) e^{-\frac{t}{\tau}}$$

$$\tau = RC = 12.3\mu s$$

Carga:
 $V_{cf} = 5$
 $V_{ci} = -1$

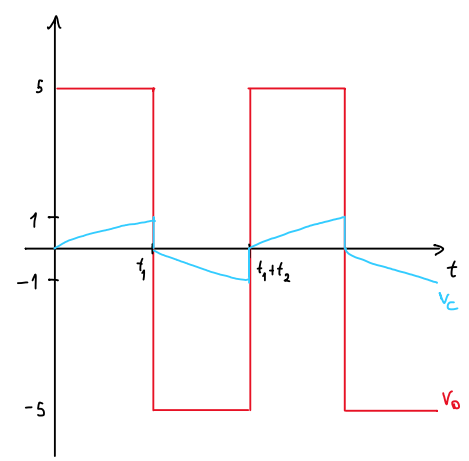
$$V_c(t) = 5 - 6 e^{-\frac{t}{\tau}}$$

$$V_c(t_1) = 1 \rightarrow \frac{4}{6} = e^{-\frac{t_1}{\tau}} \Leftrightarrow t_1 = -\tau \ln\left(\frac{2}{3}\right) = 49.87\mu s$$

Descarga:
 $V_{cf} = -5$
 $V_{ci} = 1$

$$V_c(t) = -5 + 6 e^{-\frac{t}{\tau}}$$

$$V_c(t_2) = -1 \rightarrow \frac{4}{6} = e^{-\frac{t_2}{\tau}} \Leftrightarrow t_2 = -\tau \ln\left(\frac{2}{3}\right) = 49.87\mu s$$



b) $T = t_1 + t_2 = 99.74\mu s \Rightarrow f \approx 10kHz$