Previ practica 4 segona part

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Qüestió 1: Tenim que $1cm = 0.01m \implies T = \frac{0.02}{340} = 58.8ms$ i per tant tenim que

$$f = \frac{1}{T} = \frac{340}{0.02} = 17kHz$$

Qüestió 2: En primer lloc tenim que

$$V_c(\frac{T}{2}) = V_{cc} + (V_c(t_i) - V_{cc})e^{-\frac{\frac{T}{2}-t_i}{R_{12}C_{10}}}$$

I per tant

$$-\frac{V_{cc}}{2} = -\frac{3V_{cc}}{2}e^{\frac{\frac{T}{2}}{R_{12}C_{10}}} \implies \frac{1}{3} = e^{\frac{\frac{T}{2}}{R_{12}C_{10}}}$$

$$T = 2R_{12}C_{10}ln(3) \implies f = \frac{1}{T} = \frac{1}{2R_{12}C_{10}ln(3)}$$

Qüestió 3:

$$f_{min} = 15kHz = \frac{1}{2R_2 10^{-9} ln(3)} \implies R_{2_{max}} = 30.34k\Omega$$

$$f_{max} = 20kHz = \frac{1}{2R_2 10^{-9} ln(3)} \implies R_{2_{max}} = 22.75k\Omega$$

I per tant tenim que $22.75k\Omega < R_2 < 30.34k\Omega$.