Department Of electrical and computer Engineering

ENEE2103 CIRCUITS AND ELECTRONICS LABORATORY

Experiment No.3 Prelab

Insructer: Dr. Alhareth Zyoud

Made By: Islam Jihad

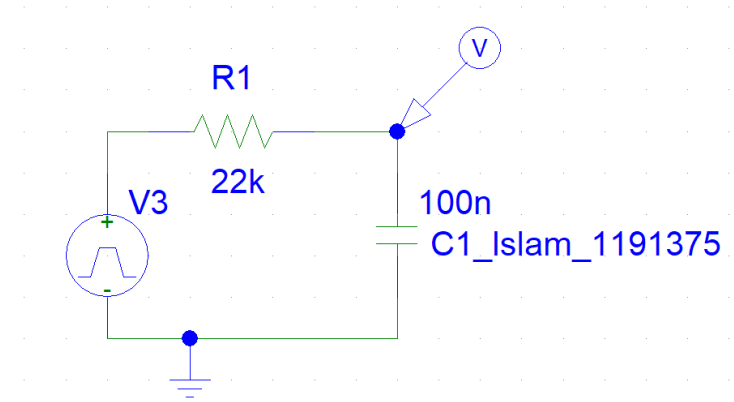
ID: 1191375

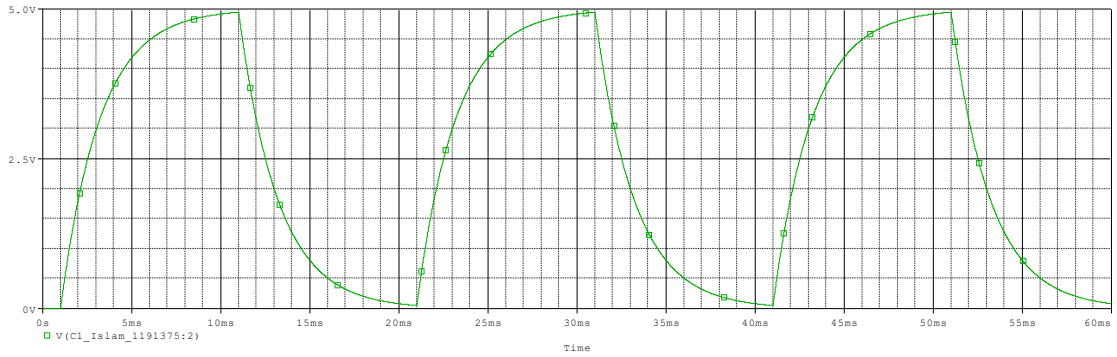
TA: MR. Ismail Abualia

Date: 28/Nov/2021

A. RC Circuit:

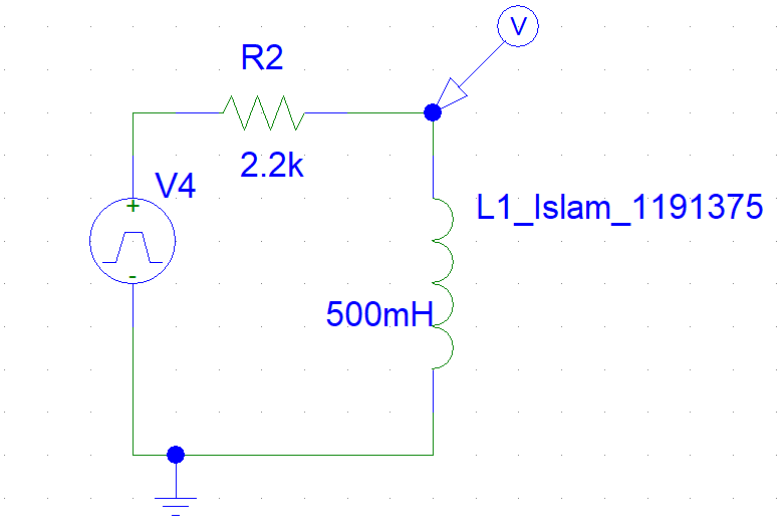
Constructing the following circuit and received the next simulation results:

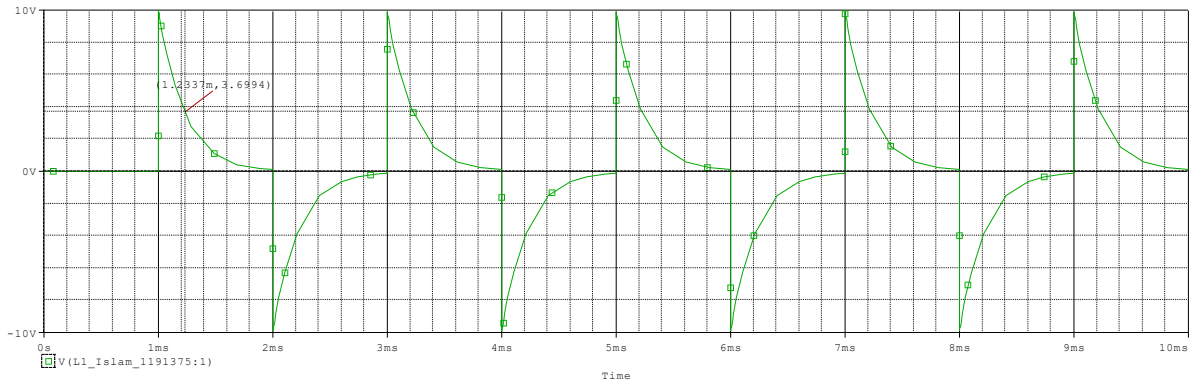




A. ***RL Circuit:***

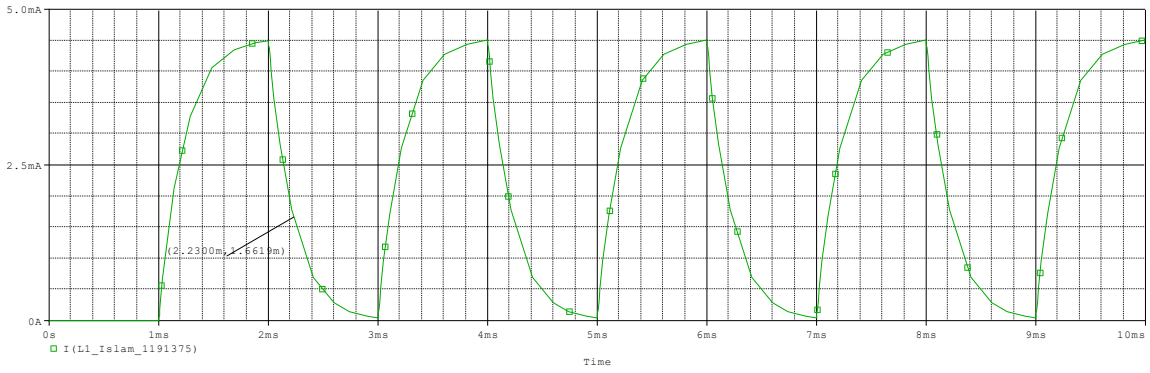
Constructing the following circuit and received the next simulation results:





Time constant (at v = 3.6994V) =~ 1.2337mSec (at 0.37 of Vp for discharging)

the steady state values of the voltage are: 0 & +-10 V

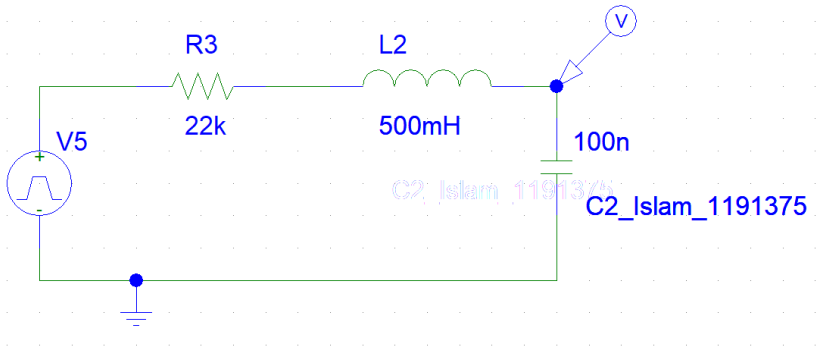


Time constant (at I = 1.666mA) =~ 2.23mSec (at 0.37 of Ip for discharging)

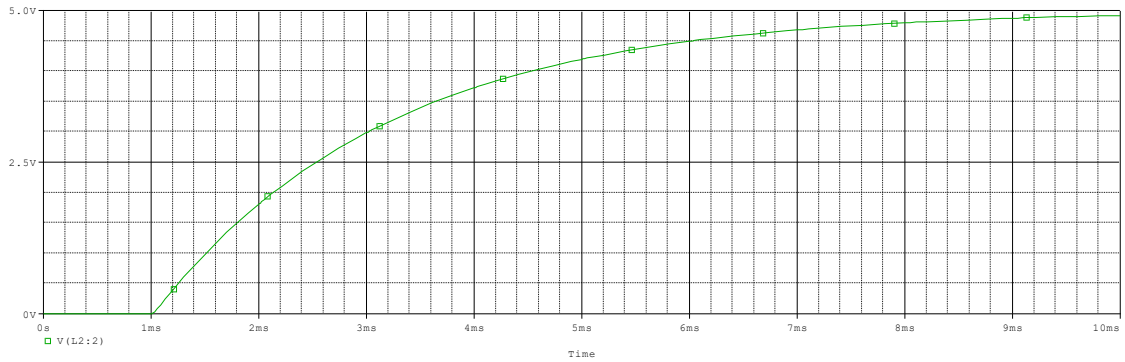
the steady state values of the current are: 0 & 4.5 mA

A. RLC Circuit:

I. Response type:



the voltage across the capacitor:

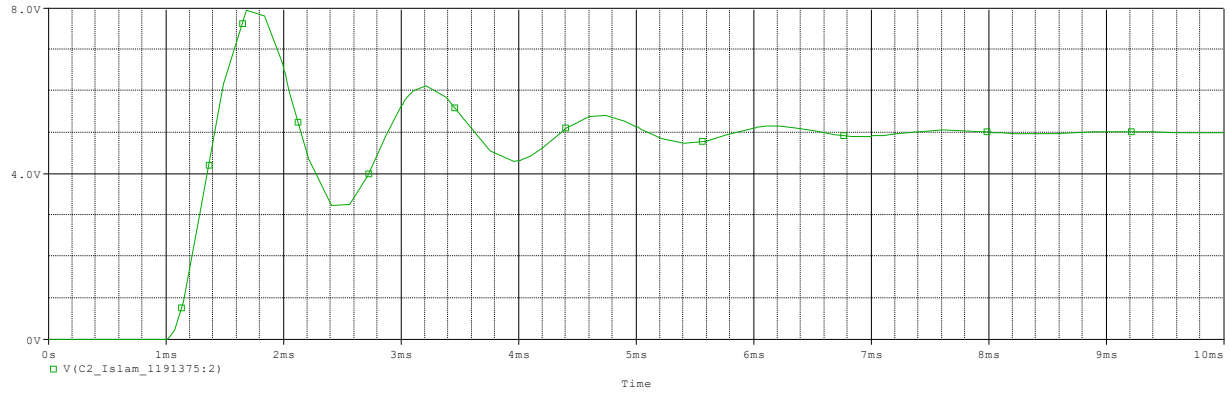


R= 2* sqroot(L/C)

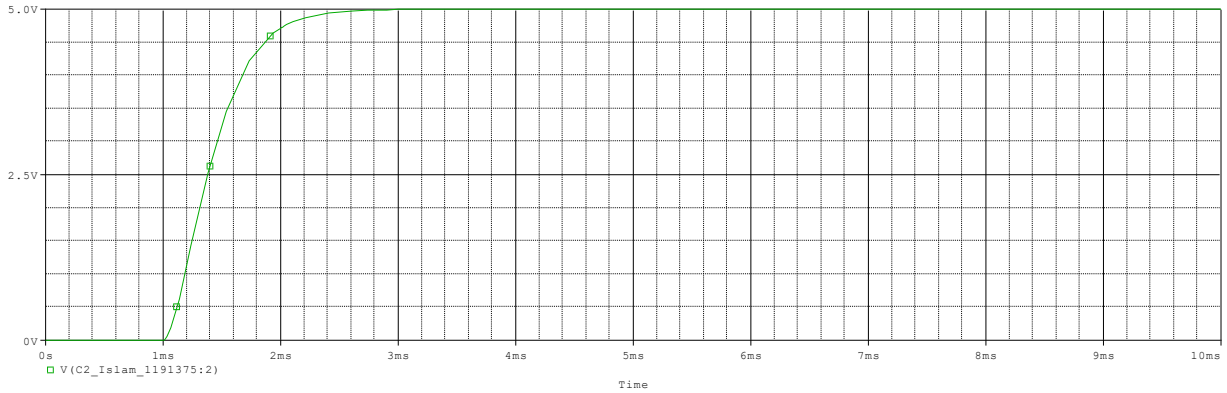
= 2* sqroot(0.500/100x10^{-9})

= 4472 ohm

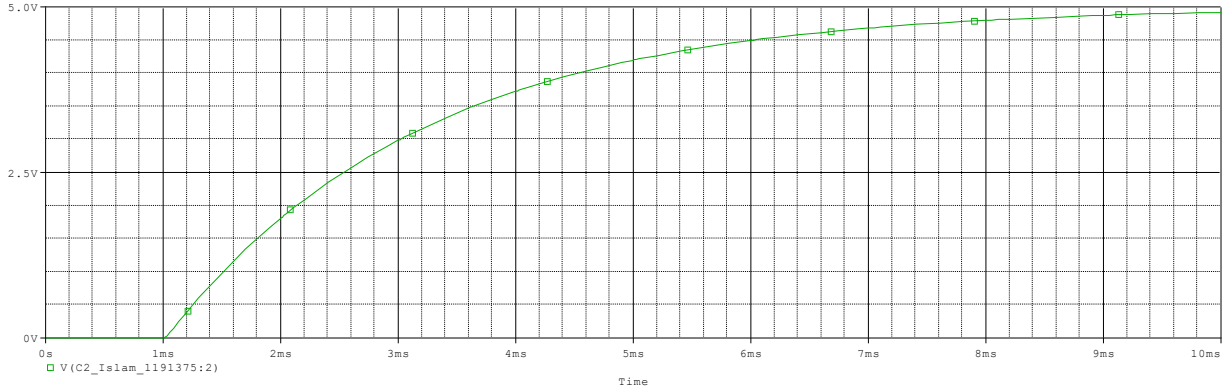
Under damping:



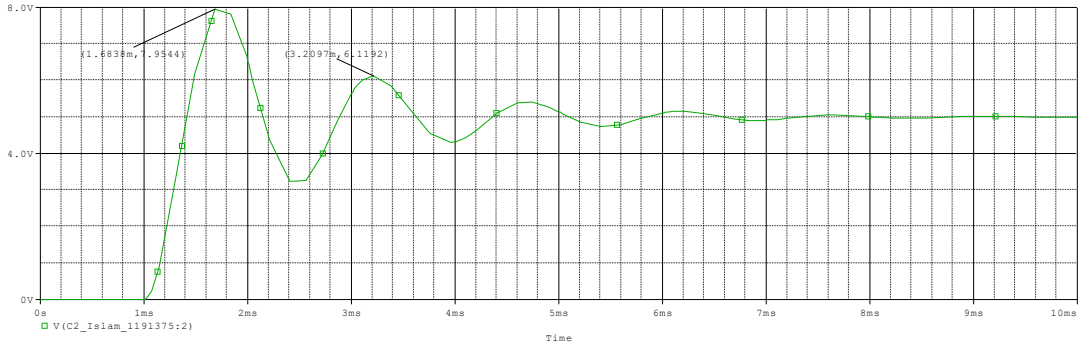
Critical damping:



Over damping:



I. Response parameters:



Decay time constant $\tau = \frac{t_b - t_a}{ln\left(\frac{V_a - V_{o(\infty)}}{V_b - V_{o(\infty)}}\right)}$

$\tau = \frac{3.2097-1.6838}{ln\left(\frac{7.9544-4.93}{6.1192-4.93}\right)} = \frac{1.5259}{ln(2.5432)} = 1.635$