

Assignment 2: Analysis of Series RLC Circuit

Submit by: 05-03-2021 End of Lab Session

Submit on: dt.shahani2020@gmail.com

iitdsl2020@gmail.com

For a series RLC Circuit, plot the capacitor voltage and inductor current when dc voltage source is applied.

DC Voltage Source = 1 V

Select L, C such that natural frequency of oscillation $\omega_n = 1000$ rad/ sec.

$$(\omega_n = \frac{1}{\sqrt{LC}} \text{ and } \zeta = \frac{R}{2} \sqrt{\frac{C}{L}})$$

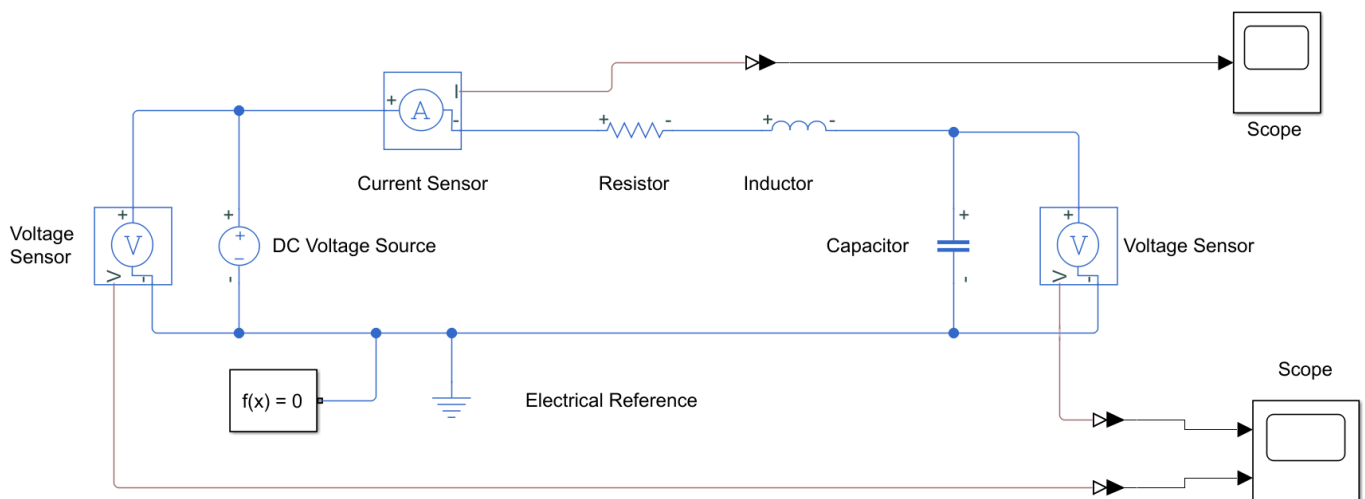
Plot for $\zeta = 0, 0.2, 0.4, 0.6, 0.8, 1$ (Total 6 cases)

A. For each value of ζ , plot the Voltage v/s Time Graph (for Capacitor) showing the given parameters:

1. **Rise Time:** The rise time is the time required for the response to rise from 0% to 100% of its final value. (Take 0% to 100%)
2. **Maximum overshoot:** The maximum overshoot is the maximum peak value of the response curve measured from unity.
3. **Peak Time:** The time at which the maximum overshoot occurs
4. **Time Period of oscillation (Td):** Time between 2 successive peaks or valleys
5. **Damped Frequency (ω_d)**

B. Plot the Current v/s Time Graph

Model:



Name:

Entry No:2020JIDXXXX

Assignment No: 2

Case 1:

R =

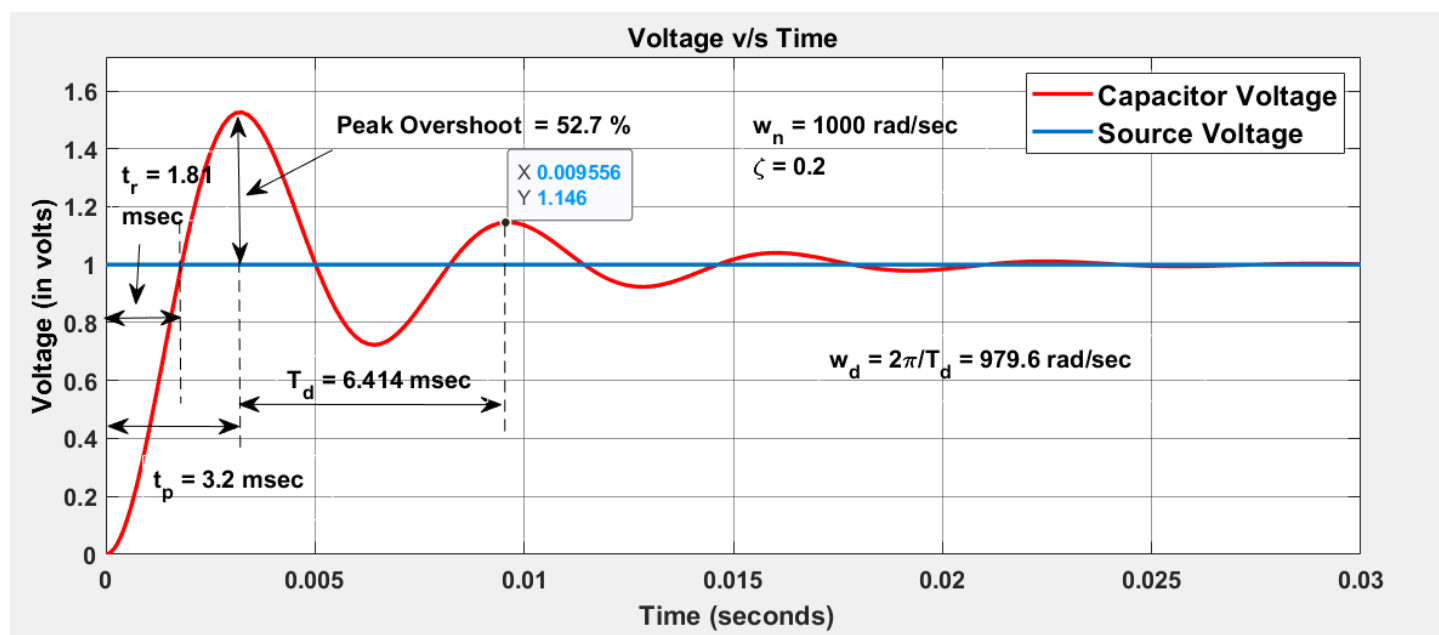
L =

C =

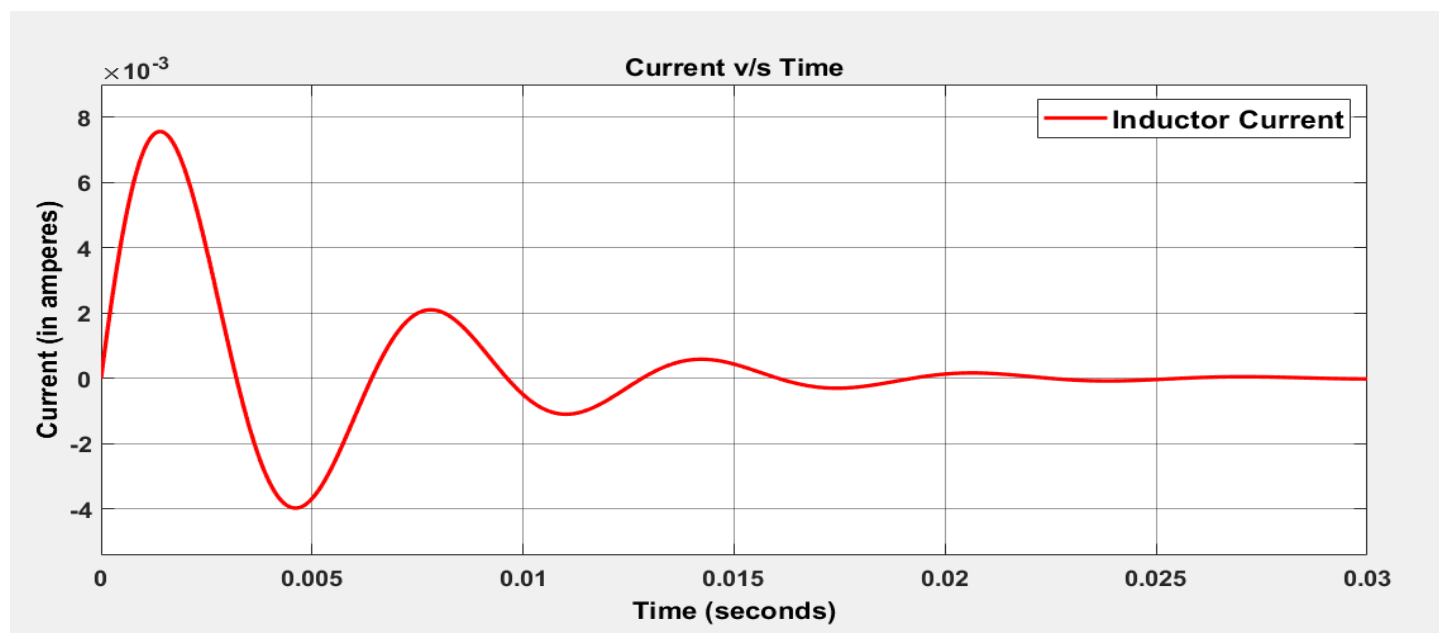
$\omega_n =$

$\zeta =$

(This is just a sample graph)



(This is just a sample graph)



[illegible]