

Electrical Circuits II Lab 2 Online – Steady State Sinusoidal Analysis

Objectives

Analyzing RLC circuits' steady state response to sinusoidal input using phase transformation and LTspice.

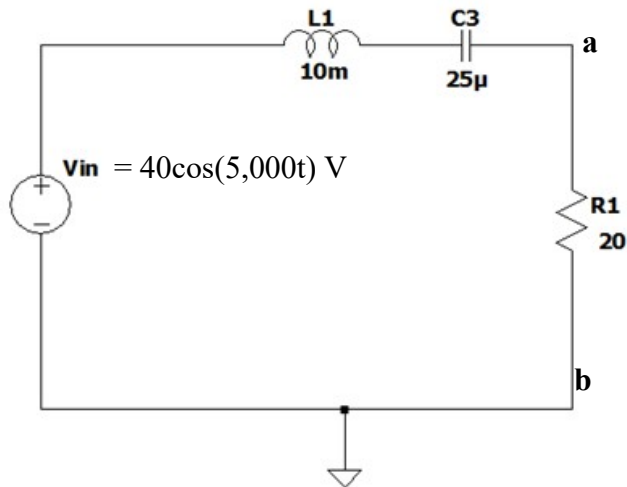
Preparation

Complete the following steps before starting to work on the experiments in this lab:

- 1) Complete Lab 1 and associated report.
- 2) Complete lecture, homework, and videos in FEC Chapter 9 and 10 “Phasor Transformation and Complex Power”.

Experiment 1

Use phasor domain to find the Thevenin equivalent of the following circuit with respect to terminals a and b.

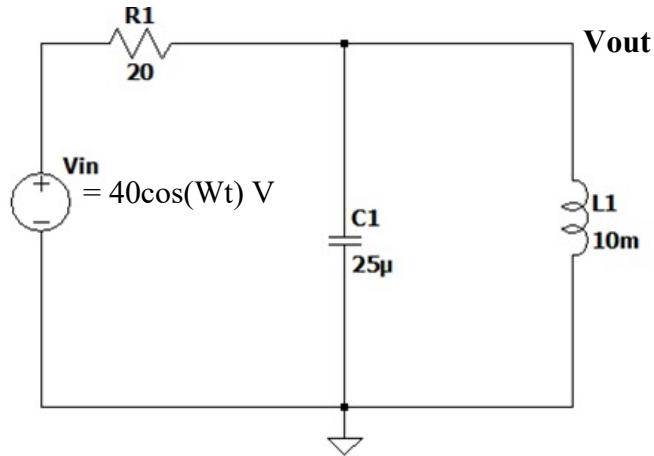


Experiment 2

Implement the above circuit in LTspice and find $V_{th} = V_{oc}$ by leaving terminals a and b open. Compare the V_{oc} measured in this experiment with the results from experiment one.

Experiment 3

Implement the following circuit in LTspice



Compare the gain $= \frac{V_{out\ Peak}}{V_{in\ Peak}}$ at $\omega = 20\pi, 200\pi, 600\pi, 2000\pi$ and $20,000\pi$ radians/sec.

Report Requirements

This lab and associated report must be completed individually. All reports must be computer printed (Formulas and Diagrams may be hand drawn) and at minimum:

For each experiment include:

- Clear problem statement in your words.
- Answer to any specific experiment questions (if any)
- Identify the theory or process and associated calculations
- Documents resulting circuit schematics from LTspice, simulation output and additional tables, timing diagram or chart required by the experiment.

For the whole report include:

- A Cover page with your name, class, lab and completion date.
- A Lessons Learned section which summarizes your learning from this lab in 5 sentences or more.
- A New Experiment section that has description of a new experiment and the experiment's results. Experiment should be related to material covered in class but not simply variation of the existing lab experiments.