ECE 210 Laboratory – Experiment 2

Objective

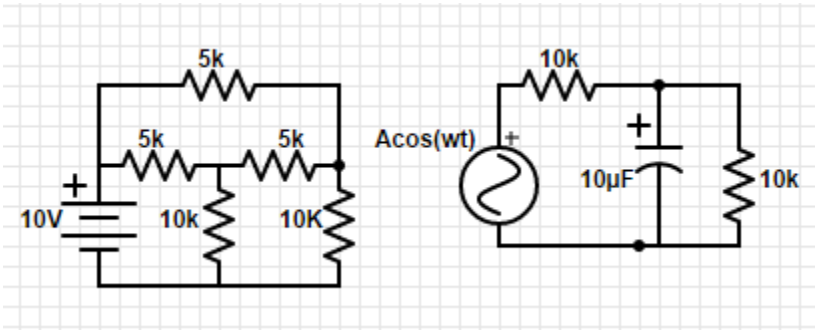
In this experiment, you will build an electric circuit using the circuit board. You will build two circuits:

a) A DC circuit consisting of a DC voltage source and resistors.
b) An AC circuit consisting of an AC source (using the function generator) and a combination of resistors and capacitors.

You will essentially test the validity of circuit laws (KCL and KVL) by making appropriate measurements.

Conducting the Experiment

The two circuits that you will build are shown below. You can get the resistors from the resistor rack near the blackboard. You can get the capacitors from your lab instructor.



1) Assemble the first circuit. Use the power supply in the workstation to supply the DC voltage. Set the voltage to 10V. Measure the node voltages at each node. Note it down . Using the node voltages, calculate the current through each resistor. Verify that both KCL and KVL are valid.

Measured Node Voltages

A	B	C

2) Now assemble the second circuit. Please note that this is an AC circuit. Its behavior depends on the amplitude of the sinusoidal voltage as well as the frequency of the sinusoid. Use the function generator (set to sine wave) as your voltage source. You will make measurements at two frequencies 1 kHz and 5 kHz. Set the input amplitude to 5V. Measure the voltage at node A for each frequency setting. Using the oscilloscope measure the phase difference between the

input sinusoid and the output voltage at node A. Note the voltages and phase angles for each setting. Verify using circuit analysis that the measurements support the theoretical calculations.

3) You may observe some discrepancies between what the theory predicts and what you actually measured. Can you explain the discrepancy?

4) Write a short paragraph on what you learnt from this experiment.