Objective:

At the completion of this experiment, you will be able to:

Built, test and analyze a voltage divider circuit using DMM.

Construct and simulate Voltage Divider Circuits. Calculate and measure the voltage and compute power dissipated by load.

DC Voltage Divider Circuits

A voltage divider is a circuit that enables us to obtain a voltage that is some fraction of the source voltage. For example, we can get any desired voltage from 0 V to 6 V from power supply. Figure below where VS is the source voltage and VO is the desired output voltage. Since there is no load is connected across R, we refer to this circuit as an unloaded voltage divider circuit.

1. In the circuit given above, select resistor value for R so that the Vo is about 1.08 V when the source voltage is set to 6 V. Compute the current and the voltage drop across the 15 k ohm resistor. Using the ammeter measure the current in the circuit. Compute the power dissipated by the two resistors using the measured
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current. Does the power supplied by the source is equal to the power dissipated by the two resistors?

Add a 2.2k resistors as load to the circuit and slowly adjust the Vs voltage until the $V_O$ is 1.5 Vdc. Measure the current and the voltage drop across 15 k ohm resistor. Compute the power dissipated by the load resistors. Compute the percent error between the measured and the computed values of the 15k ohm resistor?

AC Voltage Divider Circuits

With 2.2 K ohm load resistor slowly adjust the Vs voltage(ac) until the $V_O$ is 1.5 Vac. Measure the current and the voltage drop across 15 k ohm resistor. Compute the power dissipated by the load resistors. Compute the percent error between the measured and the computed values of the 15k ohm resistor?
2. Find the equivalent resistance of Rab for each of the circuits in figures (P3.7 in page 77) of your text book.

Using Multi Sims, verify the equivalent resistance of Rab. for each of the circuits. Attach your simulation to your lab report.
3. Compute the voltage $V_x$.

Find $V_x$ as a function of $V_s$.

Built the circuit and measure the voltage $V_x$. What is the relationship between the $V_x$ and source voltage?