# **Laboratory Exercise #2**

**Calculation of Internal Resistance of Voltmeter, Ammeter and Scope**

In this Laboratory each team shall design a circuit to model the Voltmeter, Ammeter (and Scope) so as to calculate the internal resistance of the said meters. The Meter circuit should be connected to the output port of the circuit whose measurements is to be made.

**STEP 1-**Design a simple circuit of your choice that may have a source and its internal resistance in series or parallel with some loading. Think of some circuit where KCL, KVL and Voltage Division may be applicable. Your load resistor should be higher than the internal resistance of the supply circuit.

**STEP2**-Show a circuit model of the Voltmeter (and in second part of this lab, the model of Ammeter) and connect it to the circuit said above. Your model shall include the internal resistance of the meter and your analysis will calculate the value of the Ri. Note that the internal resistance of Voltmeter should in high KiloOhms, and the internal resistance of the Ammeter should be in low miliOhms.

**STEP3**-Repeat steps 1 &2 above for an Ammeter internal resistance calculation.

## ***Report:***

Write a report of your calculation laboratory of the Voltmeter and Ammeter.

Present your Procedure, Analysis, Data, and Conclusions.

* **Procedure:** Make a written record of what you did to obtain the calculated resistance.. The procedure should be detailed enough so that another engineer could repeat the experiment, using only your written procedure as a guide.
* **Analysis:** This is an essential section of most experiment reports. In general, this section would be used to provide the theoretical relationship between the variables of the experiment.
* **Data:** Present a clear record of the numerical data obtained from calculations. of
* **Conclusions:** State what was learned and/or what physical principles were confirmed by the experiment.

Note:

State your assumptions.

Show your circuit analysis.

**Example-**Calculation of internal resistance of a 6-V Supply (Use as reference).

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