Maximum exam score is 30 points.

1. (3 points) What is the ideal input resistance of an ammeter? Justify your response using an example of the effects of an ideal and non-ideal ammeter on measuring the current provided by a Thevenin equivalent circuit.

2. (2 points) Provide the “complete” definition of Ohm’s Law.
3. (5 points) A meter movement has a series resistance of $10\Omega$ and a full scale current of $10\text{mA}$. Use this meter movement to design a $100\text{V}$ full scale voltmeter. Be sure to show a schematic of your design.
4. (5 points) Find node voltages $v_1$ and $v_2$ using nodal analysis.
5. (5 points) Find mesh currents $I_1$ and $I_2$ using mesh analysis.
6. (5 points) Thevenize the following circuit “looking into” terminals A-B. Be sure to sketch the Thevenin equivalent circuit.
7. (5 points) Find the power of each circuit element.