OHM’S LAW PRACTICAL

# NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE DONE: \_\_\_\_\_\_\_\_\_\_\_\_

**AIMS:**

1. To gain practical experience in setting up electrical circuits and using ammeters, voltmeters and variable resistors (rheostats).
2. To demonstrate Ohm’s Law.

**METHOD:**

1. Set up the following circuit. Note that the rheostat used has a 6.5A, 10 rating.  
     
    
2. By varying the resistance of the rheostat, adjust the current in the circuit to the values shown in Table No.1 below. For each value of total current in the circuit, record the potential difference across the 2 resistor.
3. On the graph sheet provided, draw a graph of potential difference versus current and show the calculation of the slope of the graph.

**RESULTS:**

* 1. **TABLE No.1:** Potential Difference and Current Values

|  |  |
| --- | --- |
| Potential Difference (V) | Current (A) |
|  | 0.5 |
|  | 1.0 |
|  | 1.2 |
|  | 1.5 |
|  | 2.0 |

* 1. What does the shape of your graph tell you about the relationship between the potential difference across the fixed resistor and the current flowing through the fixed resistor?  
       
     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Slope of graph (including units) =
  3. Compare the value of your slope with the known value of the fixed resistor used in this experiment.  
       
     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  4. Justify the placement of the ammeter and voltmeter in the circuit used for this experiment.  
       
       
     Ammeter: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
       
     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
       
     Voltmeter: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
       
     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

POWER OF A HEATING COIL PRACTICAL

# NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE DONE: \_\_\_\_\_\_\_\_\_\_\_\_

**AIMS:**

1. To gain practical experience in setting up electrical circuits and using ammeters and voltmeters.
2. To demonstrate the relationship between current, voltage and power for a model 6V to 12V electric heating coil.

**METHOD:**

1. Set up the following circuit. Use a standard 0-12V power pack as your voltage source. Note that a **2 resistor** is being used as the **heating coil**. If we so desired, we could also immerse the 2 resistor (properly enclosed) in a water bath to reduce the risk of burning it out. The extra 2 resistor is used to keep the current to a reasonable level.  
     
    
2. For each value of “voltage supplied by the power supply” shown in Table No.1 in the Results section, record the **current** in the circuit and the **voltage drop** across the heating coil.
3. Complete the table by filling in the **resistance** and **power** values for the heating coil for each voltage setting. Show a sample calculation for each physical quantity in the space provided in the Results section.
4. Supply the correct units for the resistance and power columns in the table.

**RESULTS:**

1. **TABLE No.1:** **Power Values for Heating Coil**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Voltage Supplied by Power Supply (V) | Voltage Drop Across Coil (V) | Current (A) | Resistance  Units = | Power  Units = |
| 2 |  |  |  |  |
| 4 |  |  |  |  |
| 6 |  |  |  |  |
| 8 |  |  |  |  |

1. **Sample Calculations** – When “Voltage Supplied by Power Supply” = 2V:  
     
     
   Resistance of heating coil  
     
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
     
     
   Power dissipated by heating coil  
     
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **Summary: State the relationship between current, voltage and power in electric circuits.**  
     
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_