**COMET BAY COLLEGE**



**Physics - Unit 1 - Task 3**

**Laboratory Test**

**Name: Total Marks /40**

**15 minutes Reading and Writing time.**

**20 minutes to Setup and Collect Data from the Experiment**

**20 minutes to Finish the Report**

**Important:**

It is advisable that the Aim, Hypothesis, Prediction, Materials list and Method, plus an Idea on how to record your results be completed before starting your experiments. Also it is recommended that you read all the material on this sheet before beginning.

**Background:**

The simplest way of thinking about an operating electric circuit is to consider the potential difference to be the cause and the current to be the effect. The resistance is the property of a circuit component that determines the amount of current that will flow for a given potential difference. The resistance of a circuit component determines the way it will behave in a particular location in that circuit. The energy dissipated by a component depends on its resistance and the potential difference it experiences when placed into a circuit.

A simple example of how this might be used in designing a device is the selection of a heating element for a kettle, a heater, or stove. In each case mentioned above, the potential difference will be 240 V and a particular output of heat will be required. This is not the case in this experiment.

**Aim:**

To investigate the resistor by incorporating the relationship between the potential difference and the current.

**Apparatus:**

* power supply
* switch
* seven electrical leads
* voltmeter or multimeter
* ammeter or multimeter
* three different resistors of unknown ohmic readings

**Pre-lab:**

In this practical exercise you will use electrical meters to make measurements of a potential difference and current in order to calculate the resistance of some resistors.

The voltmeter measures the potential difference across a component. This means that the voltmeter must be connected in parallel with that component.

The ammeter measures the current through a component. This means that the ammeter must be connected in series with that component.

You must still take care to connect the meter correctly when measuring potential difference and current.

**Lab Notes:**

1. Connect the equipment the way you think, in order to determine the resistance. Make sure that the meters are connected in the correct configuration. Make sure that the meters are connected with the correct polarity.
2. Set the power supply to the 8V voltage setting.
3. Note: Do not run the circuit for more than ten seconds at a time. The current will cause an increase in the temperature of the resistor, giving unexpected results.
4. Repeat steps 2, and 3 with your other two resistors.

**Post-lab Requirement**

Calculate and record the resistance values, using the formula:

**V = I R.**

**Post-lab Discussions**

1. When the current is directly proportional to the potential difference, a conductor is called an ‘ohmic conductor’. Were any of your resistors ohmic?

**Marks Distribution**

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| --- | --- | --- | --- | --- | --- |
| Section | Marks Available | Marks Received | Section | Marks Available | Marks Received |
| Aim | N/A |  | Method | N/A |  |
| Hypothesis | 4 |  | Results (exc Graph) | 4 |  |
| Prediction | 1 |  | Graph | 8 |  |
| Parameters | 3 |  | Discussion | 10 |  |
| Materials list  (The diagram only) | 5 |  | Conclusion | 5 |  |

**Aim:**

To investigate the resistor by incorporating the relationship between the potential difference and the current.

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**Apparatus:**

* power supply
* switch
* seven electrical leads
* voltmeter or multimeter
* ammeter or multimeter
* three different resistors of unknown ohmic readings

**Method**

1. Connect the equipment as shown in the circuit diagram (Figure 1). Make sure that the meters are connected in the correct configuration. Make sure that the meters are connected with the correct polarity.
2. Set the power supply to the 8V voltage setting.
3. Note: Do not run the circuit for more than ten seconds at a time. The current will cause an increase in the temperature of the resistor, giving unexpected results.
4. Repeat steps 2, and 3 with your other two resistors.

Figure 1: Laboratory equipment set up

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