**Name:

Date:

SBA:**

**Topic:** Static and current electricity

**Title:** Resistance

**Aim:** To determine the resistance of a bulb in a series circuit

**Equation**:

R = V/I

Where R means resistance with units of ohms, Ω; V means voltage with units of volts, V and I means current with units of amperes, A

**Apparatus/Materials:**  power source, connecting wires, one light bulb and an ammeter

**Method: (*Rewrite this method in past tense*)
1.** Set up a series circuit using a power source, ammeter and a light bulb as demonstrated on page \_\_\_\_.
2.Adjust the voltage at 1 V and record the amount of current flowing throughout the circuit.
3. Repeat step 2 four more times at 2V, 3V, 4V and 5V..
4. Using the results obtained plot a graph of current against time and determine its slope, R.
5. To determine the resistance of the bulb find the inverse of the slope by dividing 1 by the slope where resistance = 1/slope.

**Observations:
(*Describe what you noticed here.*)

Diagram:**

 ****

 **DIAGRAM SHOWING HOW LAB WAS EXECUTED**

**Data and Results:

Table 1 showing ……..**

|  |  |
| --- | --- |
| Voltage (V) | Amperes (A) |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Calculations: (*Show ALL calculation(s) performed*)**1. slope of graph, ***S*** = $\frac{Δy}{Δx }$ = $\frac{y1-y2}{x1-x2}$ OR $\frac{y2-y1}{x2-x1}$
2. Average resistance across bulb = $\frac{1}{S}$ Ω

**Discussion: (*Use these questions as guidelines for writing your discussion in paragraph form*)
Paragraph 1:**Define resistance giving its unit.
 **Paragraph 2:**Using your graph explain how altering voltage affects current as well as the behaviour of the intensity of the light produced from the bulb.

**Paragraph 3:**
Provide a possible limitation of this lab.
 **Precautions:
1.

2.

Reflection: (*How does this lab apply to everyday life?*)
*I now know why…..*

Conclusion:
*In conclusion …***

**Measurement and Manipulation –
IV relationships**

1. Following instructions /1

2. Uses basic laboratory equipment correctly /4
power source (1)
wires (1)
ammeter (1)
and bulb (1)

3. Sets up electrical circuit correctly /1

4. Uses electrical circuit correctly /1

5. Prepares material for observation or
investigation correctly /1

6. Student’s ability to take accurate
measurements /1

7. Student’s ability to use appropriate units /1

**Total: /10**

**Observation & Recording – IV relationships**a. Student’s ability to record observations and
to collect and organise data; observations and
data may be recorded in:

(i) Prose
Written description of observations in the correct
tense /1
(ii) Table
Appropriate headings /1
Title given /1
(iii) Graph
\* Title for graph /1
\* Title axes labelled for both x and y /2
\* Correct scales /2
\* Accurate plotting: /5
All points plotted correctly (5)
1 -2 points plotted incorrectly (4)
3 -4 points plotted incorrectly (3)
5 -6 points plotted incorrectly (2)
7- 8 points plotted incorrectly (0)
\* Fine points used /1
\* Best fit line drawn /1

(b) Reporting
Student’s ability to prepare a comprehensive
written report on their assignments using the
following format:
(i) Date (date of experiment) /1
(ii) Aim (what is to be accomplished by
doing the experiment /1
(iii) Apparatus and Materials (all equipment
and materials
used in the experiment must be listed) /1
(iv) Method/Experimental Procedure (step by
step procedure written in past tense) /2

**Total: /20**