

Lab 3

Calculation of Electrical Conductivity

Tools :

- 1- Power Supply.
- 2- Light (12 Volt).
- 3- Voltmeter.
- 4- Ammeter.

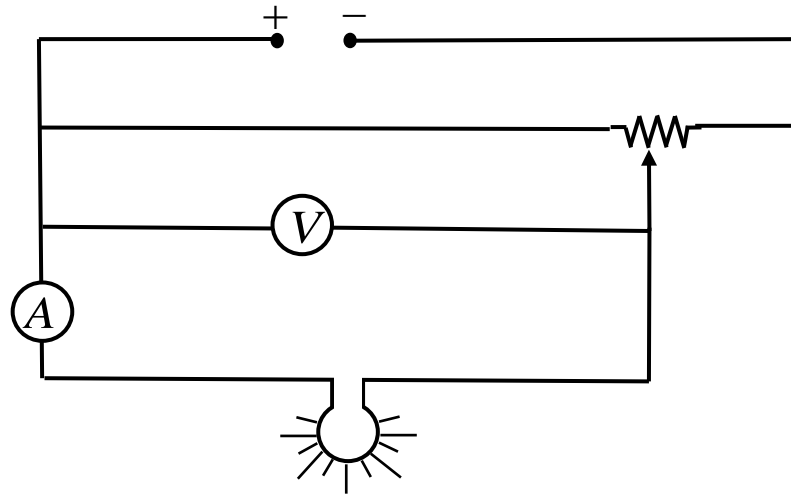


figure (1)

Theory:

There are different types of conductors that are subject to Ohm's law, but this law cannot be applied to resistors whose temperature rises significantly, as in the tungsten lamp in this experiment, because the increase in its temperature will increase its resistance to the passage of current and therefore Ohm's law cannot be applied to them because the resistance is not proven. The relationship between current and voltage as follows:

$$I=K*V$$

Where (K) is a constant value and represents the conductivity coefficient of tungsten metal.

Method or Procedure :

1. Connect the circle as shown in the figure (1).
2. Change the voltage by the power supplier from zero until the lamp is turned on.
3. Record the reading of the voltage and the reading of the ammeter in the table below.

<i>V (Volt)</i>	<i>I (Amp.)</i>	<i>log I</i>	<i>log V</i>

8. Draw a graph between (***log I***) on the y-axis and (***log V***) on the x-axis, we get a straight line that cuts the y-axis, and the cutoff represents a value (***log K***) and from it the value of (***k***) can be calculated as in the figure (2).

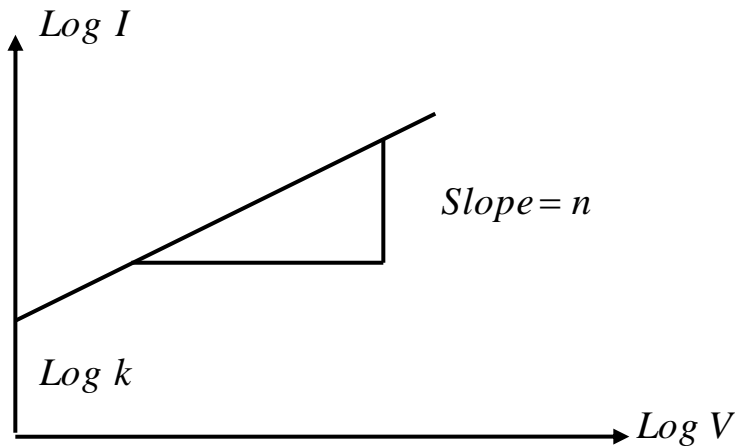


figure (2)