Experiment 2. Achieve Ohm's Law

The used devices:-

1- A battery. 2- Variable resistance (rheostat). 3- A voltmeter. 4- Ammeter. 5- Resistance. 6-key.

The theory of experiment:

Ohm's Law states that the ratio of the voltage difference (**V**) between the two ends of a conductor to the current (**I**) passing through it is a constant amount with constant temperature of the conductor.

This constant quantity represents the value of the electrical resistance ®.

The mathematical expression for Ohm's law is:

$$R = V/I \dots\dots\dots (1)$$

It is clear from equation (1) that the current is a linear function of the voltage difference, as the curve that connects the voltage difference between the two ends of the conductor and the current passing through it is a straight line.

The experiment will be carried out in two cases:-

The method of experiment:-

1- Connect the electrical circuit as shown in the figure.
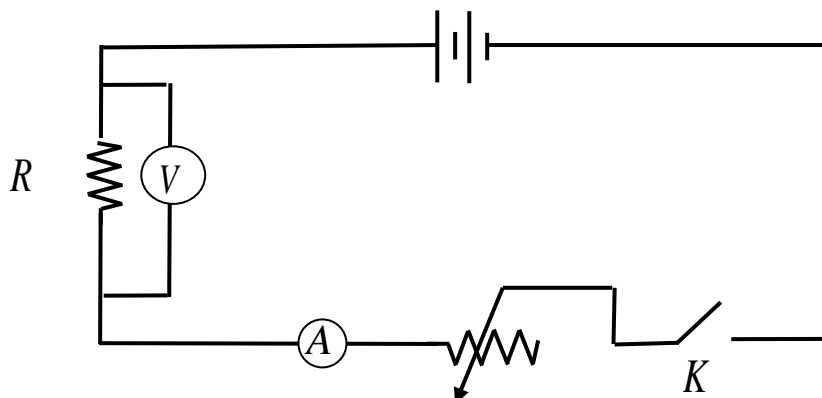
2- Close the electrical circuit, record the reading of the ammeter (I) by controlling the value of the variable resistance as well as the reading of the voltmeter (V).

3- Change the value of the current passing through the circuit using the variable resistance (Rheostat) at a rate of (0.1) mA and each time record the reading of the voltmeter (V).

4- Record the values of voltage and current in a table.

5- Draw a graph between the values of (I) and the corresponding (V) values and calculate the value of the slope.