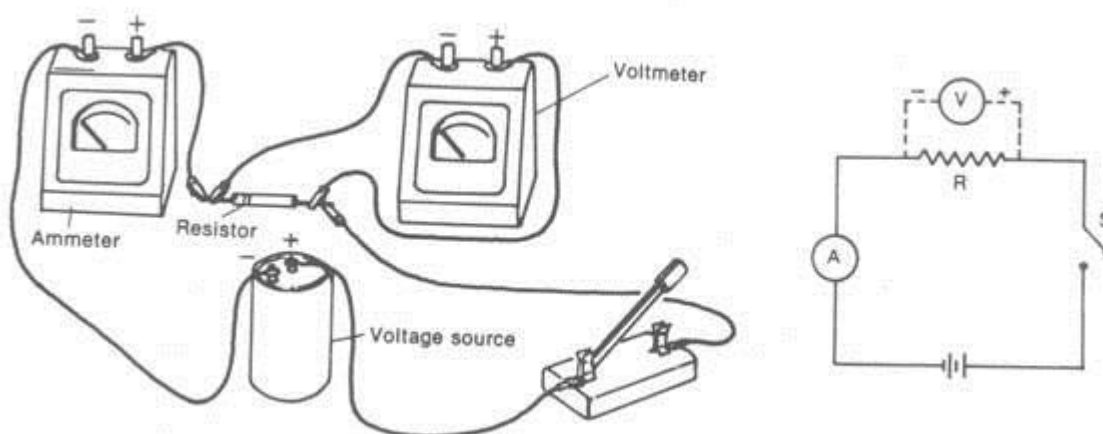<div align="center">**EXPERIMENT NO-4**</div>

AIM: To study the dependence of the current (I) on the potential difference (V) across a resistor and determine its resistance. Also, plot a graph between V and I.
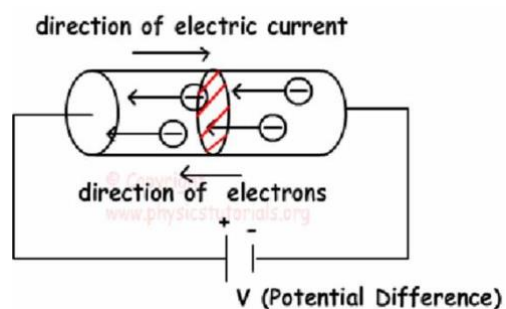
APPARATUS

A resistor, a dc voltmeter (0-3V), a dc ammeter (0-1.5A), Rheostat, Key, a cell, connecting copper wires, sandpaper.

THEORY

According to Ohm's Law:-the resistance R of a resistor is defined as the ratio of the potential difference V across the end of the resistor to the electric current I flowing through it.

R=V/I

If the ammeter reading is in amperes and voltmeter reading is in volts, then the resistance will be in ohms.

PROCEDURE

Circuit diagram as drawn by the students.

The various electrical components were arranged on the laboratory table by students.

These components were connected with small pieces of copper wires as shown in the circuit diagram.

The plug was inserted in the hole of the key and the rheostat was adjusted so that the small current was flowing through the circuit.

The readings of the ammeter and voltmeter r were noted down in the tabular form.

PRECAUTIONS

The ends of the copper wire should be cleaned with sandpaper.

All connections should be tight.

Remove the plug as soon as you have taken the reading current in the circuit should be changed smoothly with the help of rheostat.

Observation and Calculation

Range of ammeter-------

Range of voltameter------

Least count of ammeter---

Least count of voltameter------

S.No.	Ammeter reading (I)(in ampere)	Voltmeter reading (V)(in volts)	Resistance (R)R꠵V Ohms) (I
1.			
2.			
3.			
4.			
5.			

Mean Value of R= Plot a graph between V and R

PRACTICAL BASED QUESTIONS

1. An ammeter can measure current up to 500mA. There are 20 equal divisions between 0 and 100mA marks on its scale. During an experiment to determine the equivalent resistance of the two resistors joined in parallel a student observes ammeters pointer at 3rd graduation mark after zero when the key is off and the pointer at the 17th graduation mark after 200m. A when the key is inserted into the plug. Find the value of the current flowing in the circuit.

2. Draw a labeled circuit diagram that you are likely to use for verifying Ohm's law.

3. State the SI unit of current and define it.

An electric circuit consisting of a nichrome wire XY, an ammeter, a voltmeter, four cells of 1.5V each and a plug key is to be set up for studying the relationship between the potential difference maintained between the point X and Y and the current flowing through the wire XY. Draw its circuit.

4. A student has taken ammeter reading and voltmeter while verifying ohms law. Draw the graph he is likely to obtain between the ammeter readings and voltmeter readings. Why should this straight line graph pass through the origin?

5. In a milliammeter, there are 20 divisions between 400mA and 500mA mark. What is the least count of milliammeter?

6. An ammeter has a range of (0-3) ampere and there are 30 divisions on its scale. What is its least count?