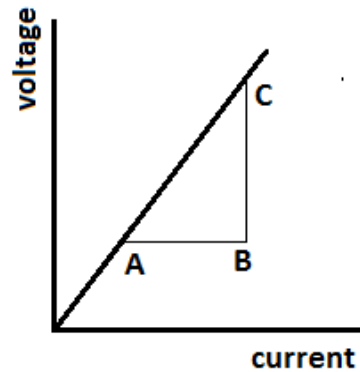


Scale
 Origin (0, 0)
 Along X axis, 10 division = 0.2 A
 Along Y axis, 10 division = 0.2 V



Observations and Calculation

(resistor – length of wire **L=50 cm**)

Trial No	Ammeter Reading I in ampere	Voltmeter reading V in volt	Resistance $R = \frac{V}{I}$ in ohm
1			
2			
3			
4			
5			
6			
7			
8			

Mean $R = \dots\dots\dots$ ohm

Resistance of the conductor $R = \frac{V}{I} = \dots\dots\dots$ ohm.

Conductance $C = \frac{1}{R} = \dots\dots\dots$ mho

From V-I Graph

Resistance $R = \frac{BC}{AB} = \dots\dots\dots$ ohm

OHM'S LAW 1

AIM

1. To plot V-I graph of the given wire
2. To determine resistance of the given wire
3. To determine conductance of the given wire
4. To determine resistivity of the given wire

APPARATUS

cell, key, the given wire, voltmeter, ammeter, rheostat, connecting wire

THEORY

Ohm's law states that at constant temperature, the potential difference across the ends of a conductor is directly proportional to current flowing through the conductor.

Resistance of the conductor $R = \frac{V}{I}$

From V-I Graph Resistance $R = \frac{BC}{AB}$

Conductance $C = \frac{1}{R}$

Resistivity of material of wire, $\rho = \frac{\pi r^2 R}{L}$

where

R=resistance of wire

r=radius of wire

L=length of wire

To find the radius of wire using screw gauge

$$\text{Least Count} = \frac{\text{pitch}}{\text{No. of divisions on the head scale}} = \frac{1\text{mm}}{100} = 0.01\text{mm}$$

Zero coincidence =

Zero correction, **Z** =

Diameter of the wire					
Sl No	PSR mm	Observed HSR	Corrected HSR (HSR+Z)	Corrected HSR X LC mm	Total Reading PSR + (Corrected HSR x LC) mm
1					
2					
3					
4					
5					

Mean diameter **d** = mm

Radius of the wire $r = \frac{d}{2} = \dots\dots\dots \text{mm} = \dots\dots\dots \text{m}$

Length of the wire $L = \dots\dots\dots \text{cm} = \dots\dots\dots \text{m}$

Resistivity of material of wire, $\rho = \frac{\pi r^2 R}{L} = \dots\dots\dots \text{ohmmeter}$

PROCEDURE

Connections are made as shown in fig.

The key is pressed & rheostat is adjusted to get a current 0.8A in the ammeter. The corresponding volt meter reading is noted. The current is increased as 1A,1.2A,1.4A,1.6A.....& in each time voltmeter reading is recorded. Now $R = \frac{V}{I}$ is calculated & mean value is taken.

A voltage-current graph is plotted & slope of V-I graph gives resistance of the conductor.

Measure the radius of wire using a screw gauge and length using a meter scale. Hence calculate resistivity of the conductor.

RESULT

1. V-I graph of the given wire is plotted
2. Resistance of the given wire
 1. By calculation=.....ohm
 2. From graph=.....ohm
3. Conductance of the wire=.....mho
4. Resistivity of the wire=.....ohmmeter