Electrical and Electronics Engineering Lab Report

Exp No: *02*
Exp Name: ***Varification of ohm's law***.
Equipmets: 1.Ammeter 2.Voltmenter 3.Bread borad 4.Two resistance 5.DC power supply 6.Connecting wires

Theory: Ohm's law states that the current through a conductor between two points is directly proportional to the voltage across the two points.

$$\begin{aligned} I &\propto V \\ \Rightarrow I &= GV \\ \Rightarrow I &= V/R \end{aligned}$$

I is the current through the conductor in units of amperes.
V is the voltage measured across the conductor in units of volt.
R is the resistance of the conductor in units of ohm.

Circuit diagram: The circuit diagram is look like the following figure below.

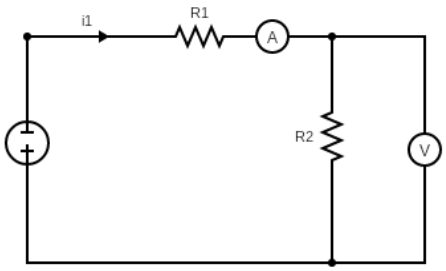

Fig 1.1: Circuit diagram

Calculation:

$$1^{\text{st}} test, \quad I_1 = v_1/R_1 = \tfrac{3}{10.4} = 0.28846A$$

$$2^{\text{nd}}test, \quad I_1 = v_1/R_1 = \frac{4}{10.4} = 0.3846A$$
$$3^{\text{rd}}test, \quad I_1 = v_1/R_1 = \frac{6}{10.4} = 0.0.5769A$$
$$4^{\text{th}}test, \quad I_1 = v_1/R_1 = \frac{7}{10.4} = 0.673A$$

Data table:

$s.n$	$voltage(V)$	$I_m(A)$	$I_{cal}(A)$	$Error = \lvert\frac{I_{cal}-I_m}{I_{cal}}\rvert \times 100\%$
1	3	0.27311	0.2886	5.32%
2	4	0.3612	0.3846	6.08%
3	6	0.5321	0.5769	7.76%
4	7	0.659	0.673	2.08%

Graph:

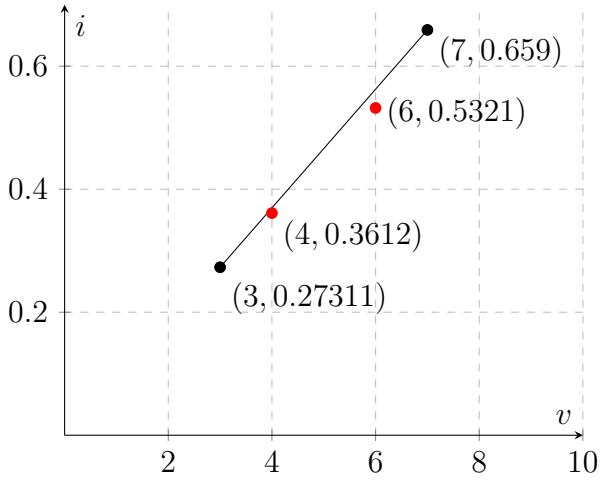

fig 1.1: Graph of Ohm's law

Result: The experimental result indicates that there is a linear relation between the current and voltage both in the first and thrid quadrant. The slope of the straight line is also the same in both the quadrants which shows that the potential difference across the terminals of the conductor is proportional to the current passing through it.

Discussion: Ohm's law is very essential law for electrical circuit. From this experiment we have verified the law. We should bear in mind that the exact value would be vary for temperature. We must be careful to connect the circuit to DC power supply. We have to put back all the elements in their own place and leave the lab quitely.