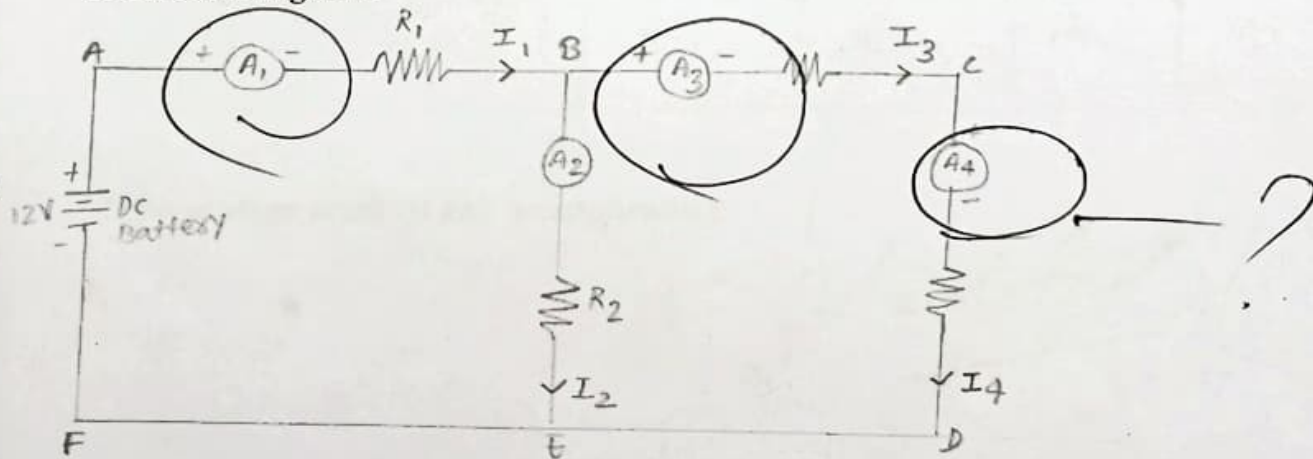


1. Aim: To Verify Kirchhoff's Current Law (KCL) and study its limitations.

2. Apparatus:

Sr.No	Equipment Name	Specification & Range	Quantity in No.
1.	Regulated Variable DC supply	0-30V, 0-2 A	1
2.	Digital multimeter	0-2 A	1
3.	Resistor	of different values	6
4.	connecting wires	As per requirement	

3. Circuit Diagram:



#### 4. Steps for experiment:

1. The circuit is connected as shown in Fig.
2. The voltage of DC supply was set at 12V.
3. Different values of  $R_1$  to  $R_4$  were taken and readings of  $A_1$  to  $A_4$  were noted down.
4. Accordingly, only one set of reading was taken at 12V DC supply.
5. The observations were recorded in Table.

#### 5. Calculations/Theorems /Formulas used etc

According to Kirchhoff's current law,

Algebraic sum of incoming current = Algebraic sum of outgoing current

$$I_1 = I_2 + I_3 \quad \& \quad I_3 = I_4$$

$$\Rightarrow 2.1 = 1.1 + 1.0$$

$$\Rightarrow 2.1 = 2.1$$

$$\therefore 1 = 1$$

#### 6. Observations/Discussions:

Sr. NO	Supply voltage $V_{dc}$ (V)	Ammeter $I_1$ (A)	Ammeter $I_2$ (A)	Ammeter $I_3$ (A)	Ammeter $I_4$ (A)
1.	12V	2.1	1.1	1.0	1.0

#### 7. Percentage error (if any or applicable):

Calculated?

**8. Result/Output/Writing Summary:**

As per Kirchhoff's current law, the theoretical and calculated values of algebraic sum of currents are compared:

$$\begin{aligned} I_1 &= I_2 + I_3 \quad \neq \quad I_3 = I_4 \\ \Rightarrow 2.1 &= 1.1 + 1.0 & \Rightarrow 1.0 &= 1.0 \\ \Rightarrow 2.1 &= 2.1 \end{aligned}$$

**9. Graphs (If Any): Image /Soft copy of graph paper to be attached here****Learning outcomes (What I have learnt):**

1. Learnt to Test and Verify the KCL law.
2. Learnt, The measurement of Resistance & current.
3. Learnt, The Designing of series
4. Learnt, The measurement of voltage.
5. Learnt about The Designing of Parallel circuit.