Aim: To verify Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL)
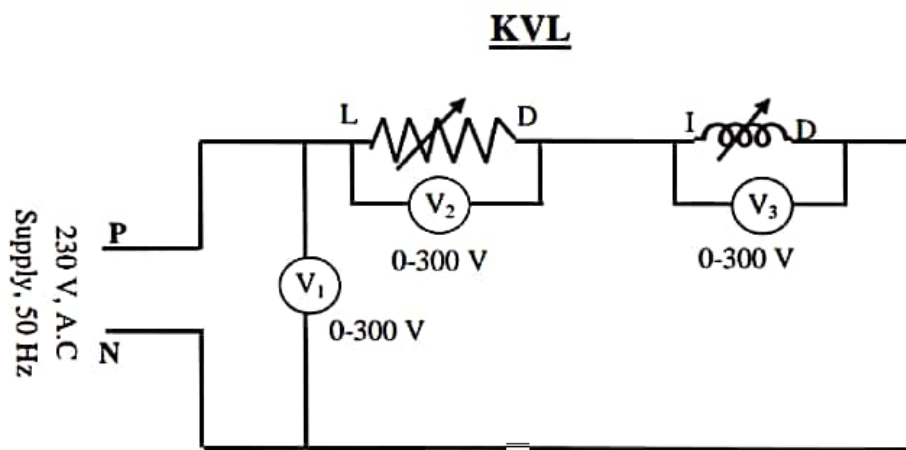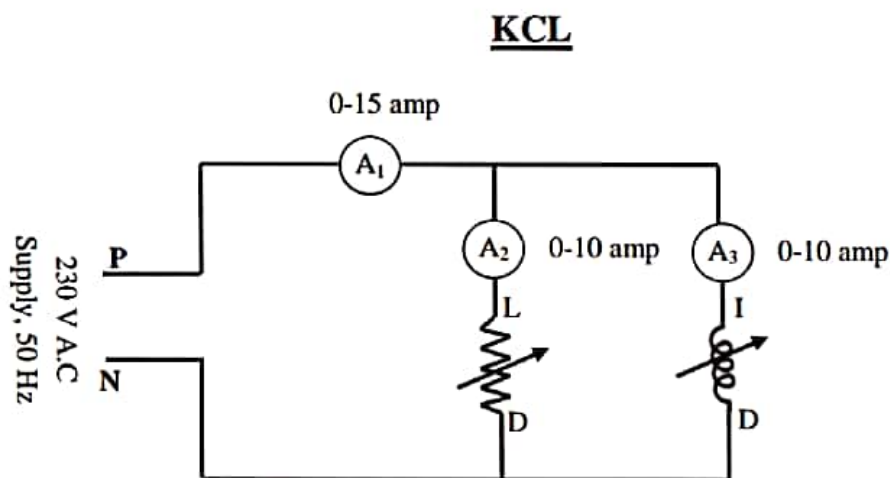
Apparatus Required:

1. A.C. Ammeter- 3 nos. (0-10 amp)
2. A.C Voltmeter - 3 nos. (0-300 V)
3. Rheostat
4. Inductive Load
5. Connecting wires

Circuit Diagram:

KCL

KVL

Theory:

Procedure:

KCL:

1. First measure the least count of all ammeters A_1, A_2, and A_3 and all voltmeters V_1, V_2 and V_3.
2. Connect the circuit as shown in the diagram.
3. Now, vary both the resistive and inductive load to obtain different readings of ammeters A_1, A_2 and A_3 and voltmeters V_1, V_2 and V_3.
4. Repeat the same procedure for different observations.
5. Calculate percentage error.

KVL:

1. Connect the circuit as shown in the diagram.
2. Now, adjust both the rheostat and inductive load to obtain different values of then take V_1, V_2 and V_3.
3. Repeat the same procedure for different observations.
4. Calculate percentage error.

Observation Table:

KVL

Sl.No.	V_1 in (Volts)	V_2 in (Volts)	V_3 in (Volts)	$V_1' = \sqrt{V_2^2 + V_3^2}$	% Error
1					
2					
3					

KCL

Sl.No.	A_1 in (Volts)	A_2 in (Volts)	A_3 in (Volts)	$A_1' = \sqrt{A_2^2 + A_3^2}$	% Error
1					
2					
3					

Calculations:

KCL

$$\% \text{ Error} = \left|\frac{A_1' - A_1}{A_1}\right| \times 100$$

KVL

$$\% \text{ Error} = \left|\frac{V_1' - V_1}{V_1}\right| \times 100$$

Precautions:

1. Make the connections properly.

2. Note the readings of voltmeters and ammeters properly.

3. Remove insulations from the connecting wire so as the current will flow properly.

4. Avoid loose connections and don't touch wire with wet hand.