Experiment – 1(a)

Aim : To Verify the Superposition Theorem using D.C. Sources.

Apparatus :
1. Voltmeter (0-50V)
2. Ammeter (0-150 mA)
3. Resistance Network (T-Network)
4. Power supplies (DC)

Theory: If a network having large number of voltage and current sources acting simultaneously, the resultant current in any branch is the vector sum of the currents that would be flowing through it, when each source act alone replacing all other independent sources by their internal resistances.

Procedure:

1. Connect the circuit as shown in fig.(a). note down the reading of ammeter (I_1).
2. Now connect the circuit as shown in fig.(b) and note down the reding of ammeter (I_2).
3. Connect the circuit as shown in fig.(c). note down the reading of ammeter (I_3).
4. Tabulate the readings of ammeter.

Observation:

Sr.No	V_1(volts)	V_2(volts)	I_1(mA)	I_2 (mA)	I_3 (mA)

Result:

Precautions:

Circuit Diagrams for Super Position Theorem:

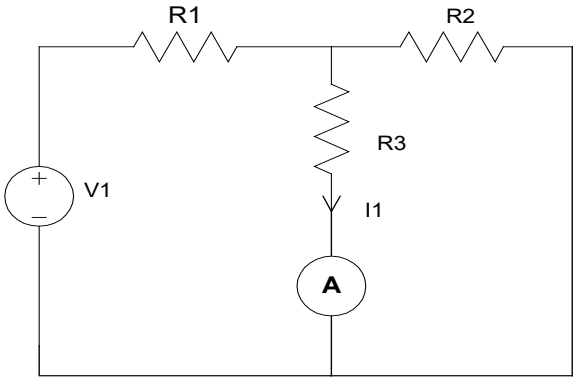

FIG-(a)

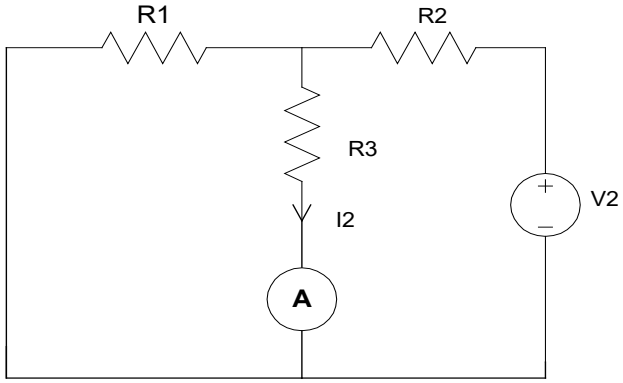

FIG- (b)

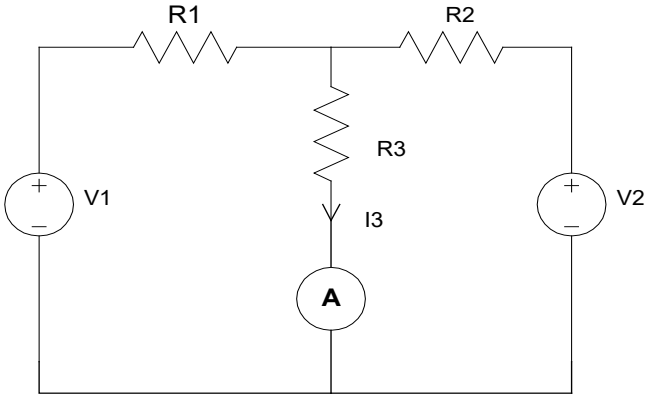

FIG-(c)

Experiment – 1(b)

Aim : To Verify the Superposition Theorem using A.C. Sources.

Apparatus :
1. Voltmeter (0-50V) A.C.
2. Ammeter (0-500 mA)
3. Resistance Network (T-Network)
4. Transformer (230V / 12V) (230V /24V)

Theory: If a network having large number of voltage and current sources acting simultaneously, the resultant current in any branch is the vector sum of the currents that would be flowing through it, when each source act alone replacing all other independent sources by their internal resistances.

Procedure:

5. Connect the circuit as shown in fig.(a). note down the reading of ammeter (I_1) using AC Voltage Sources (12V).
6. Now connect the circuit as shown in fig.(b) and note down the reding of ammeter (I_2) using AC Voltage Sources (24V).
7. Connect the circuit as shown in fig.(c). note down the reading of ammeter (I_3).
8. Tabulate the readings of ammeter.

Observation:

Sr.No	V_1(volts)	V_2(volts)	I_1(mA)	I_2 (mA)	I_3 (mA)

Result:

Precautions:

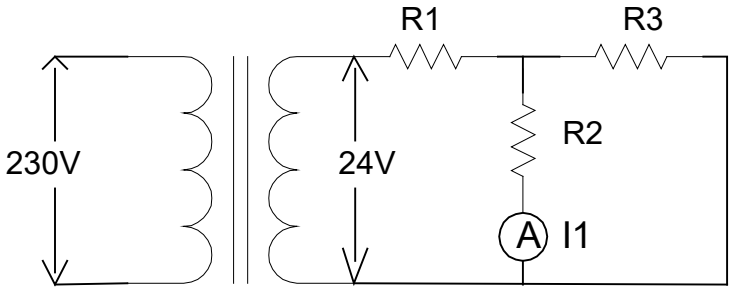

Fig.a

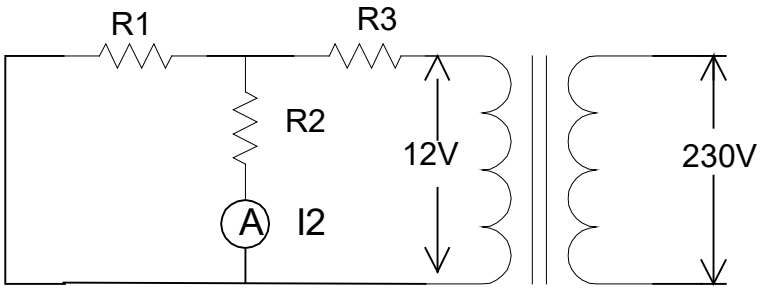

Fig.b

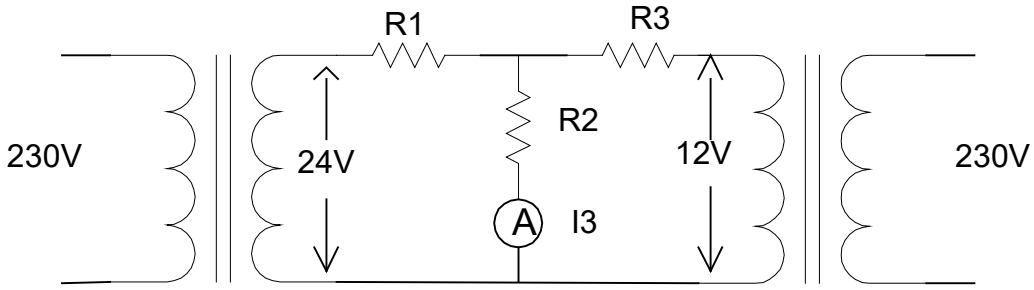

Fig.c