

**Experiment No. 2**  
**Date :**

## VERIFICATION OF SUPERPOSITION THEOREM

### Aim:

To verify the superposition theorem for the given circuit.

### Apparatus Required:

Sl.No.	Apparatus	Range	Quantity
1	RPS (regulated power supply)	(0-30V)	2
2	Ammeter	(0-10mA)	1
3	Resistors	1k $\Omega$ , 330 $\Omega$ , 220 $\Omega$	1 each
4	Bread Board	--	1
5	Wires	--	Required

### Statement:

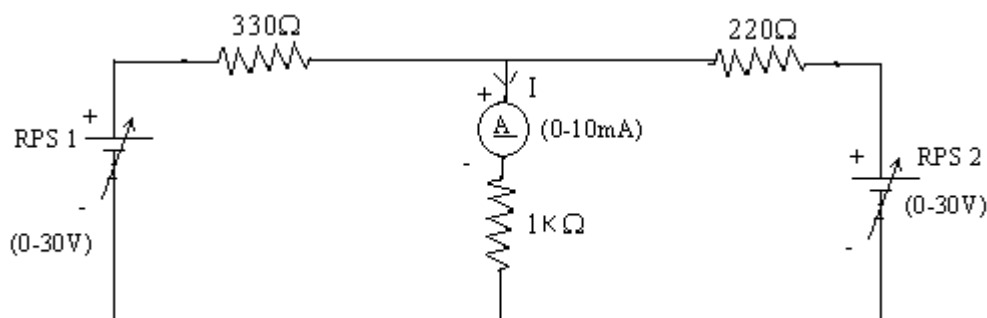
Superposition theorem states that in a linear bilateral network containing more than one source, the current flowing through the branch is equal to the algebraic sum of all the currents flowing through that branch when sources are considered one at a time and replacing other sources by their respective internal resistances.

### Precautions:

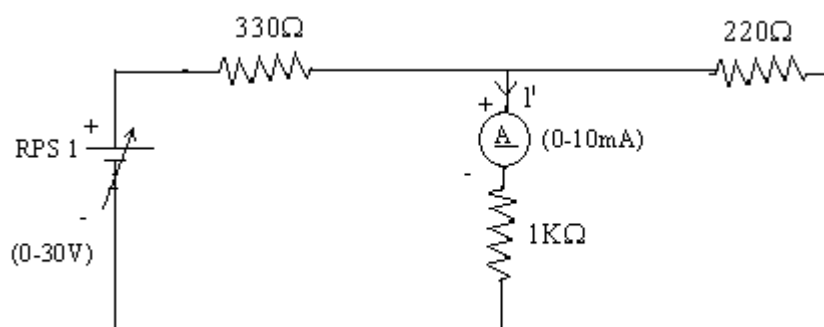
1. Voltage control knob of RPS should be kept at minimum position
2. Current control knob of RPS should be kept at maximum position

### Procedure:

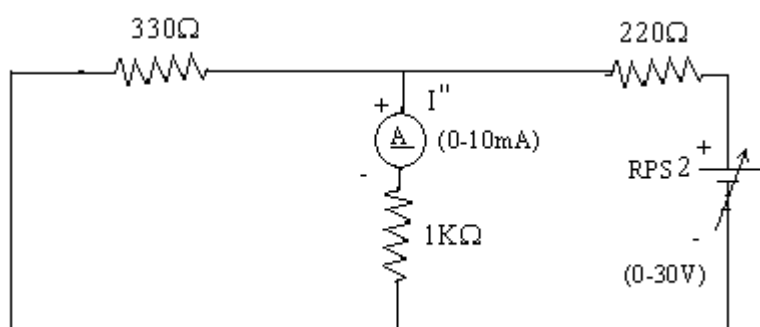
1. Give the connections as per the diagram.
2. Set a particular voltage value using RPS<sub>1</sub> and RPS<sub>2</sub> & note down the ammeter reading
3. Set the same voltage as in circuit 1 using RPS<sub>1</sub> alone and disconnect RPS<sub>2</sub> and short circuit the terminals and note the ammeter reading.
4. Repeat the same procedure with RPS<sub>2</sub> and note down the ammeter reading.
5. Verify superposition theorem.



**CIRCUIT - 1**



**CIRCUIT - 2**



**CIRCUIT - 3**

**TABULAR COLUMN**

**Theoretical Values**

	RPS		Current (mA)
	1	2	
Circuit – 1			I=
Circuit – 2			I' =
Circuit – 3			I'' =

$$I = I' + I'' = \underline{\hspace{2cm}} \text{ mA}$$

**Practical Values**

	RPS		Current (mA)
	1	2	
Circuit – 1			I=
Circuit – 2			I' =
Circuit – 3			I'' =

$$I = I' + I'' = \underline{\hspace{2cm}} \text{ mA}$$

## Model Calculations:

**Result:**

Thus Superposition theorem was been verified both theoretically and practically.

## **POST LAB**

1. Using superposition theorem predict the voltage across the load resistor for the experiment conducted.
2. When analyzing circuits, when is it best to use: The Superposition Theorem?
3. What is the internal resistance of the ideal voltage source?
4. Draw the circuit diagram of a practical voltage source with internal resistance.