Report of the Laboratory 04

Verify Superposition Theorem for Resistive Network

Course Title: Basic Electrical Engineering Laboratory
Course Code: CSE 124

Submitted By

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Submitted To

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EXPERIMENT NO: 04

NAME OF THE EXPERIMENT:

Verification of Superposition Theorem for Resistive Network

OBJECTIVE:

- To verify superposition theorem for a given circuit.
- To understand how multiple sources influence voltage across individual elements.

THEORY:

The **superposition theorem** states that the voltage across (or current through) an element in a linear circuit is the algebraic sum of the voltages (or currents) caused by each independent source acting alone.

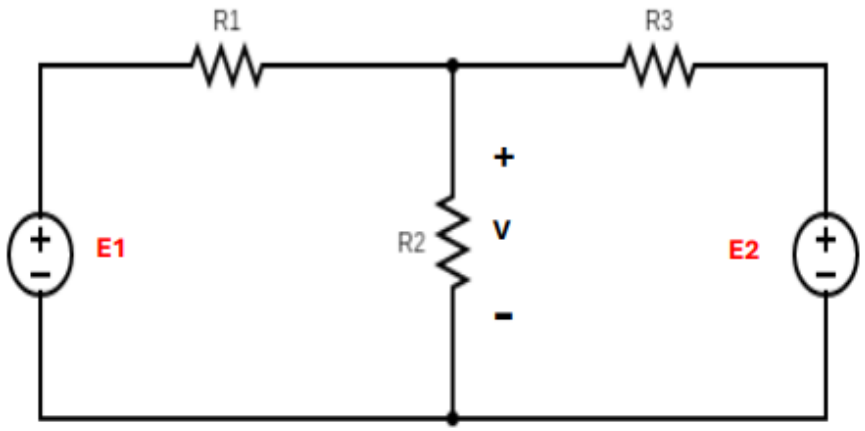
Conditions to turn off sources:

- Voltage source → Replace with short circuit
- Current source → Replace with open circuit

APPARATUS:

- 2 Voltage Sources
- Connecting Wires
- Multimeter
- 3 Resistors (R1 = 470Ω, R2 = 560Ω, R3 = 680Ω)

CIRCUIT DIAGRAM:



Number of Observation	Source Voltage (Volts)	VR2 (Volts)	V1 (Volts)	V2 (Volts)
01	E1 = 6V, E2 = 12V	5.92V	3.14V	2.78V
02	E1 = 9V, E2 = 15V	7.26V	3.89V	3.37V

CALCULATION:

Observation 1:
VR2 = V1 + V2
= 3.14 + 2.78
= 5.92 V ✔

Observation 2:
VR2 = V1 + V2
= 3.89 + 3.37
= 7.26 V ✔

DISCUSSION:

In this experiment, we applied the **superposition theorem** by analyzing the voltage across resistor R2. First, we activated both sources and recorded the total voltage across R2. Then we deactivated one source at a time (by short-circuiting voltage sources) and recorded the resulting voltages. The sum of individual voltages (V1 and V2) matched the voltage when both sources were active.

Hence, the **superposition theorem** is verified experimentally.

Thank you, Sir.