

LAB NO: 04**IMPLEMENTATION OF A SERIES-PARALLEL DC CIRCUIT****OBJECTIVE:**

THEORY:**SERIES PARALLEL DC CIRCUIT:**

Simple series parallel networks maybe viewed as interconnected series and parallel sub-networks. Each these networks maybe analyzed through basic series and parallel techniques such as application of voltage divider and current divider rule along with Kirchhoff's voltage and current law. This is important to analyze most simple series and parallel connections in order to jump to more complex numbers.

VOLTAGE DIVIDER RULE:

A voltage divider (also known as a potential divider) is a passive linear circuit that produces an output voltage (V_{out}) that is a fraction of its input voltage (V_{in}). Voltage division is the result of distributing the input voltage among the components of the divider.

Mathematically given as;

$$V_{out} = \frac{Z_2}{Z_1 + Z_2} \cdot V_{in}$$

APPARATUS:

- DC Power Supply
- Resistors
- Digital Multimeter (DMM)

SCHEMATIC DIAGRAM:

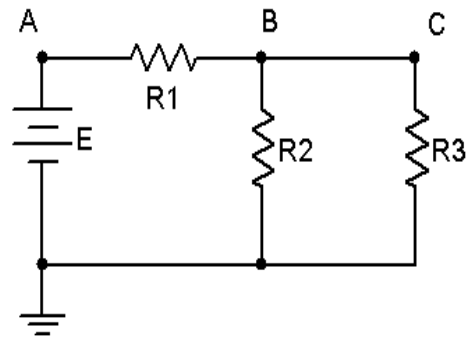


Figure 4.1: Series Parallel DC Circuit

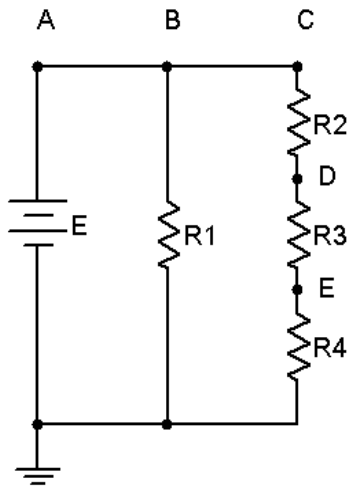


Figure 4.2: Series Parallel DC Circuit

PROCEDURE:

CALCULATIONS:

For Figure 1:

V(Theoretical)	V_{R1}	V_{R2}	V_{R3}
V(Measured)			

Table 4.1

Current Through	I(Theoretical)	I(Measured)
R ₁		
R ₂		
R ₃		

Table 4.2

For Figure 2:

V(Theoretical)	V_{R1}	V_{R2}	V_{R3}	V_{R4}
V(Measured)				

Table 4.3

Current Through	I(Theoretical)	I(Measured)
R ₁		
R ₂		
R ₃		
R ₄		

Table 4.4

CONCLUSION:

POST LAB QUESTIONS:

1. Is KCL verified in this experiment?

2. What will be the equivalent resistance of the circuits shown in the figure 4.1 and 4.2?

3. Two bulbs, connected to a supply of 220V, and having a rating of 80W and 100W, are connected in series and then in parallel. Which bulb will glow brighter in both cases?

Teacher Remarks:

Obtained Marks: _____ / 10