

Experiment No.5

SERIES-PARALLEL NETWORKS

Object

Become familiar with connect the series-parallel circuits and examine the series-parallel combination

Theory

A series-parallel configuration is one that is formed by a combination of series and parallel elements Fig.1

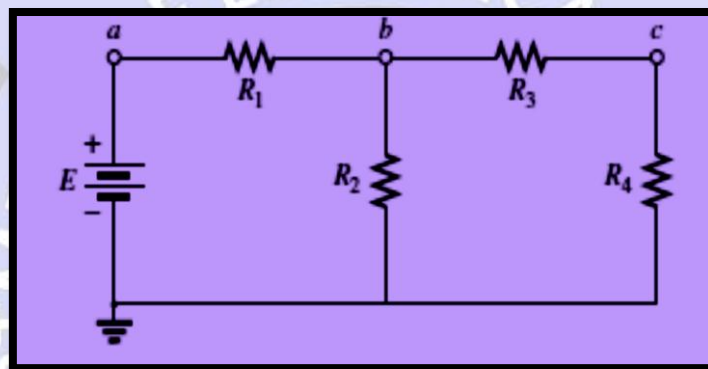


Fig.1

The network in Fig. .1 is a series-parallel network. At first, you must be very careful to determine which elements are in series and which are in parallel. For instance, resistors R_1 and R_2 are *not* in series due to resistor R_3 connected to the common point b between R_1 and R_2 . Resistors R_2 and R_4 are *not* in parallel because they are not connected at both ends. They are separated at one end by resistor R_3 . The need to be absolutely sure of your definitions from the last two chapters now becomes obvious. In fact, it may be a good idea to refer to those rules as we progress through this chapter. If we look carefully enough at Fig. 7.1, we do find that the two resistors R_3 and R_4 are in series because they share only point c , and no other element is connected to that point



Apparatus

- Multimeter.
- Several resistors.
- D.C power supply

Procedure

1. Connect the circuit shown. let Value of R1 and R2 potentiometer 100 Ω in Fig.2

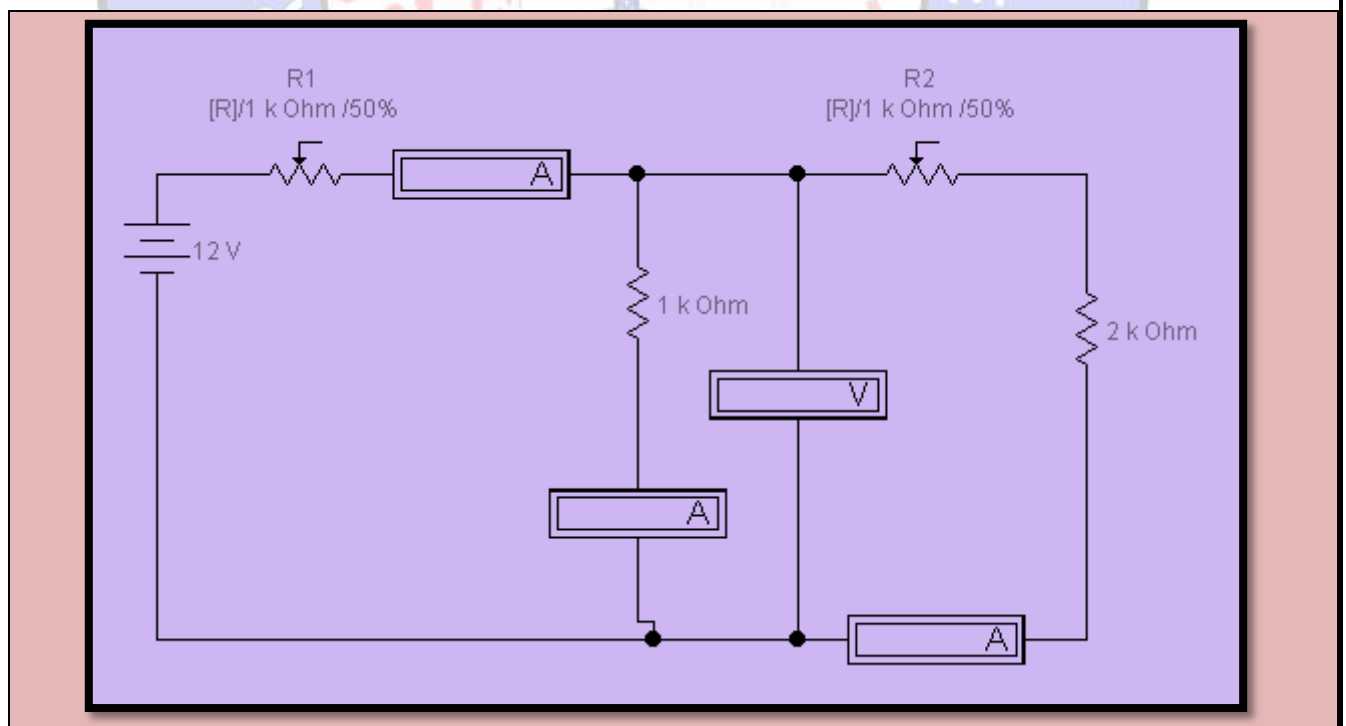


Fig.2



2. Increase the applied voltage from the D.C power supply from (0 – 10) V, in step of (2)V, measure the current and voltage through the (1KΩ) resistor in each step 1 and record the measured result of table.1.

Power supply (volt)	I measured (mA)	V measured	I calculated (mA)	V calculated	Error %
0					
2					
4					
6					
8					
10					

Table 1

3. Increase the Value of R1. let R2 100Ω and record the measured result Table 2.

potentiometer (Ohm)	I measured (mA)	V measured	I calculated (mA)	V calculated	Error %
200					



400					
800					
1000					
1500					
2000					

Table 2

Discussion

1. Increase the Value of R2 in same value of R1 as in the table 2 and record the measured result let R1 and 100Ω
2. What happened for the voltage and current in each branch when we Increase the applied voltage
- 3 What happened for the voltage and current in each branch when we Increase the value of R1
- 4 What happened for the voltage and current in each branch when we Increase the value of R2
- 5 Can you tell me, what is the difference between number (3) and number (4)?