Experiment #2

Series – Parallel Circuits

EENG 275 - W01

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**Experiment Objectives**

* **Check for voltage division method**
* **Check for Current division method**
* **Analyze circuit in series and in parallel**

**Equipment Used**

Components Used in the Experiment:

1. NYIT supplied Lab Kit
2. Digital Multi-meter (DMM)

1- DC Power Supply

1. 1.5 kΩ Resistor

1- 2 kΩ Resistor

1- 2.2 kΩ Resistor

1. 3.3 kΩ Resistor
2. 510 Ω Resistor

2- 680 Ω Resistor

2- 1 kΩ Resistor

3- 3 kΩ Resistor

1- Breadboard

**Results**

*1. Construct Figure 2.2, measure RT, I2, I3, I4, I5, I6, IS, V1, VA, V5, and V4 using the DMM.*

|  |  |
| --- | --- |
| Rt | 1030Ω |
| I2 | 7.57A |
| I3 | 5.18A |
| I4 | 2.12A |
| I5 | 1.05A |
| I6 | 1.05A |
| Is | 14.88A |
| V1 | 9.94V |
| VA | 5.09V |
| V5 | 0.53V |
| V4 | 4.56V |

*2. Construct Figure 2.3, measure RT, IS, I1, I2, and I3 using the DMM*

|  |  |
| --- | --- |
| Rt | 1457Ω |
| Is | 6.91A |
| I1 | 4.43A |
| I2 | 1.23A |
| I3 | 1.23A |

**Questions**

1. State the factors which can account for the percent differences. Consider both components and the measuring instrument

- The in-built resistance of the DMM that leads to a slight offset of the reading.

2. Suppose in Figure 2.3, R3 burns out and makes an open. Will RT be larger or smaller?

- Rt would be bigger for the parallel resistance between resistors 2 and 3 is smaller than the given scenario where R3 burns out.

3. In Figure 2.3, what will IS be if a resistor of the value RT is placed across VS and all other resistors remain the same?

- With the resistor value of 1457 added across Vs, Rt becomes 728.5ohms for the final resistor and the new resistors are added in parallel. Thus, Is will be 13.72mA

**Conclusion**

In this experiment we constructed different parallel and series circuits and thus we have verified the voltage division and current division rules. By analyzing the given circuits we were able to validate our calculations and find the measurements as specified in both questions using the DMM.