Title: **Series Circuit Voltage** Lab: 4

Course: Electrical Applications Unit: Electrical Lab CLO: 2, 3, 4

Name ANSWER KEY Grade \_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall calculate electrical values in a series circuit using Ohm’s Law
2. Student shall evaluate the volts and ohms in a series circuit.
3. Student shall measure voltage in a series circuit using a multimeter.
4. Student explain the effects of changing resistance within a series circuit.

**Assessment**

Students shall demonstrate a comprehension of the objectives listed above by scoring a minimum of 75% on this Lab. Grading shall be based on instructor evaluation.

**Materials**

|  |  |
| --- | --- |
| Student Provided Materials | Department Provided |
| Proto-Board | Power Supply |
| Multimeter |  |
| Resistor/Wire kit |  |
| Calculator |  |

**Instructions**

Using the figure below, answer the following problems.

|  |  |
| --- | --- |
|  |  |
|  |

Where;

Calculations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P | I | R | E |
| R1 | 3.692mW | 1.754mA | 1.2kΩ | 2.105V |
| R2 | 3.692mW | 1.754mA | 1.2kΩ | 2.105V |
| R3 | 10.153mW | 1.754mA | 3.3kΩ | 5.789V |
| Total | 17.544mW | 1.754mA | 5.7kΩ | 10V |

**Instructions**

|  |  |
| --- | --- |
|  |  |
|  |

Where;

Measurements

Build the circuit shown above and complete the following table using measured values (power shall be calculated based on measured values).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P | I | R | E |
| R1 |  |  |  |  |
| R2 |  |  |  |  |
| R3 |  |  |  |  |
| Total |  |  |  |  |

Evaluations

1. Do the measured values match the calculated values? Why or Why not?

*They are very close. Variances in source voltage and resistor values would cause differences.*

1. After performing your measurements, explain the characteristics of voltage in a series circuit.

*The source voltage is divide by the resistors. Adding up the resistor voltages equals the source voltage.*

1. What is the relationship between resistance and power in a series circuit?

*The higher the resistance value, the higher the power will be.*

1. In basic terms, describe the function of a series circuit.

*A series circuit is a voltage divider.*