Title: **Series Circuit Current** Lab: 3

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, ohms and amperage of a series circuit.
3. Student shall measure current and voltage in a 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 |  |  | 220Ω |  |
| R2 |  |  | 330Ω |  |
| R3 |  |  | 1kΩ |  |
| Total |  | 3.226mA | 1.55kΩ | 5V |

**Instructions**

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

Where;

Measure circuit values

Build the circuit shown above and complete the following table using measured.

**WARNING:** Do not attempt to take any current readings without getting direction from the instructor first.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | R | E |
| R1 | A1 = |  |  |  |
| R2 | A2 = |  |  |
| R3 |  |  |  |
| Total |  |  |  |  |

Evaluation

1. Do the measured values of A1 and A2 match?

*A1 and A2 should match each other.*

1. Does your answer in the previous question align with the characteristics of a series circuit? Why or why not.

*Since A1 and A2 match, this proves the current is the same in a series circuit.*

1. If the value of R3 decreases, what will happen to the total circuit current? Why?

*If R3 is decreased, the total circuit current shall decrease therefore the total circuit current will increase.*

Replace R3 with a 560Ω resistor.

1. Measure and record the currents A1 \_\_\_\_\_\_\_\_\_\_ and A2 \_\_\_\_\_\_\_\_\_\_
2. Do the measured values in step 4 support your answer in question 3?
3. What have you concluded about the characteristics of a series circuit?

*A series circuit has only one path for current.*