Title: **Voltage Divider** Lab: 16

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

Name ANSWER KEY Grade 27pts Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall calculate complex combination circuit quantities using the characteristics of a series and a parallel circuit.
2. Student shall construct the circuit and analyze the results.

**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.

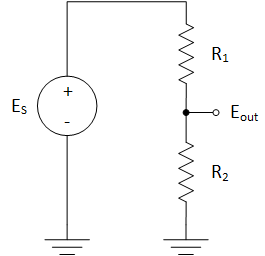
**Materials**

|  |  |
| --- | --- |
| Student Provided Materials | Department Provided |
| Proto-Board | Power Supply |
| Multimeter |  |
| Resistor Kit |  |
| Calculator |  |

**Theory**

A voltage divider is a passive linear circuit that produces an output voltage (Eout) that is a fraction of its input voltage (ES). Voltage division is the result of distributing the input voltage among the components of the divider. A simple example of a voltage divider is two resistors connected in series, with the input voltage applied across the resistor pair and the output voltage emerging from the connection between them. Resistive voltage dividers are commonly used to create reference voltages, or to reduce the magnitude of a voltage so it can be measured.

**Circuit**



Where;

**Instructions**

Calculations

1. Compute the following values based on the Ohm’s Wheel and the information given on the pervious page. **NOTE: Use the resistance and voltage readings to calculate current and power.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P | I | R | E |
| R1 | 25.580μW | 6.133μA | 680kΩ | 4.171V |
| R2 | 30.847μW | 6.133μA | 820kΩ | 5.029V |
| Total | 56.427μW | 6.133μA | 1.5MΩ | 9.2V |

Measurements

1. Construct the circuit on the previous page. Take measurements and complete the table below.

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

Evaluations

1. What would be the effect of increasing the value of R2 on EOUT?
   1. Go Up
   2. Go Down
   3. Stayed the same
2. What would be the effect of cutting the value of both R1 and R2 in half on IT?
   1. Go Up
   2. Go Down
   3. Stayed the same
   4. Stayed the same
3. Would cutting the value of both R1 and R2 in half have an effect on Eout?
   1. Yes
   2. No