Title: **Series Circuits** Worksheet: 5

Course: Electrical Applications Unit: Electrical Theory CLO: 3

Name ANWSER KEY Grade 44pts. Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall calculate power, current, resistance and voltage for each resistor in a series circuit.
2. Student shall distinguish the principle that a series circuit only contains one current.
3. Student shall formulate that a series circuit is a voltage divider.

**Assessment**

Students shall demonstrate a comprehension of the objectives listed above by scoring a minimum of 75% on this Worksheet. Grading shall be based on an answer key.

**Circuit**

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

Where;

ET = Source Voltage (10V)

R1 = First Resistor (220Ω)

R2 = Second Resistor (330Ω)

**Instructions**

Using the Ohms Wheel, solve for total current, voltage drop and power dissipated by each resistor. All answers will be in engineering units M, k, m, and μ. Display at least 1 whole number and not more than 3 whole numbers to the left of the decimal, and round off to 3 decimal places to the right of the decimal.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P | I | R | E |
| R1 | 72.727mW | 18.182mA | 220Ω | 4 |
| R2 | 109.091mW | 18.182mA | 330Ω | 6 |
| Total | 181.818mW | 18.182mA | 550Ω | 10V |

**Circuit**

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

Where;

ET = Source Voltage (15V)

R1 = First Resistor (580Ω)

R2 = Second Resistor (1.1kΩ)

R3 = Third Resistor (860Ω)

Complete the table below for the parameters listed above.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P | I | R | E |
| R1 | 20.228mW | 5.906mA | 580Ω | 3.425V |
| R2 | 38.363mW | 5.906mA | 1.1kΩ | 6.496V |
| R3 | 29.993mW | 5.906mA | 860Ω | 5.079 |
| Total | 88.583mW | 5.906mA | 2.54kΩ | 15V |

Where;

ET = Source Voltage (35V)

R1 = First Resistor (720Ω)

R2 = Second Resistor (2.8kΩ)

R3 = Third Resistor (10Ω)

Complete the table below for the parameters listed above.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P | I | R | E |
| R1 | 70.781mW | 9.915mA | 720Ω | 7.139V |
| R2 | 275.261mW | 9.915mA | 2.8kΩ | 27.762V |
| R3 | 983.075μW | 9.915mA | 10Ω | 99.150mV |
| Total | 347.025mW | 9.915mA | 3.53kΩ | 35V |