Title: **Series Circuits** Test: 4

Course: Electrical Applications Unit: Electrical Theory CLO: 3

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

**Objectives**

1. Student shall identify different electrical characteristics as they pertain to a series circuit.
2. Student shall calculate various electrical quantities for a series circuit based on Ohm’s and Watt’s Laws.
3. Student shall draw a schematic of a series circuit.

**Assessment**

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

**Instructions**

Select all the correct answers to each of the following multiple-choice questions.

1. A series circuit can also be thought of as a;
   1. Voltage Divider
   2. Current Divider
   3. Power Divider
   4. Resistance Divider
2. What is common in a series circuit;
   1. Voltage
   2. Current
   3. Power
   4. Resistance
3. An open series circuit can be defined as;
   1. Has very high current
   2. Has very high voltage
   3. Has no current
   4. Has no voltage
4. A shorted series component affects the circuit by;
   1. Causing the total circuit current to increase
   2. Causing the total circuit current to decrease
   3. Causing the total circuit voltage to increase
   4. Causing the total circuit voltage to decrease
5. A series circuit can be defined as;
   1. The sum of the individual currents equals the total current
   2. Current has only one path for current flow
   3. The voltage drop across each component is the same
   4. The sum of the individual currents equals the source amperage
6. In a series circuit, if a resistor is added in series the circuit current shall;
   1. Increase
   2. Decrease
   3. Stay the same
   4. Go to 0
7. In a series circuit, if an individual resistor’s resistance is decreased, the total circuit current shall;
   1. Increase
   2. Decrease
   3. Stay the same
   4. Go to 0
8. In a series circuit, if the source voltage is increased, the total circuit current shall;
   1. Increase
   2. Decrease
   3. Stay the same
   4. Go to 0



1. Refer to the schematic above which has a blown fuse. For the circuit in this state, the total current shall;
   1. Increase
   2. Decrease
   3. Stay the same
   4. Go to 0
2. Refer to the schematic above which has a blown fuse. For the circuit in this state, the voltage across the blown fuse would read;
   1. Source Voltage
   2. 0V
   3. Infinite Voltage
   4. None of the above
3. Refer to the schematic above which has a blown fuse. For the circuit in this state, the voltage across R1 would read;
   1. Source Voltage
   2. 0V
   3. Infinite Voltage
   4. None of the above

**Instructions**

Refer to the schematic below to complete the following questions.



1. Compute the source voltage.
2. Compute the total circuit current.
3. Compute the resistance of R2.
4. Compute the power dissipated from R3.
5. Compute the total power dissipated by the circuit.

**Instructions**

A series circuit contains the following values:

ES = 29V, R1 = 1.2kΩ, R2 = 3.9kΩ, R3 = 800Ω and R4 = 1.7kΩ

Draw the schematic of the circuit below and solve the following problems. (Drawing 1pt.)



1. Compute the total circuit resistance.
2. Compute the total circuit current.
3. Compute the power dissipated from R3.
4. Compute the voltage drop across R2.
5. Compute the current flow through R1.
6. Compute the total power dissipated by the circuit.
7. Compute the voltage drop across R1.
8. Compute the power dissipated from R2.

**Instructions**

Refer to the schematic below to calculate the following voltage references.



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| EA | EB | EC | ED | EE | EF |
| 43.904V | 40.198V | 22.237V | 0V | -6.557V | -21.096V |
| EAB | EBC | ECD | EDE | EEF |  |
| 3.706V | 17.961V | 22.237V | 6.557V | 14.539V |  |
| EAC | EAD | EAE | EAF |  |  |
| 21.667V | 43.904V | 50.461 | 65V |  |  |
| EDA | EDB | EDC | EDF |  |  |
| -43.904V | -40.198V | -22.237V | 21.096V |  |  |