

Electric Circuits Lab

******You must have instructor approval of the physical set-up before***
you turn on the power supply.***

Parts:

- A. Determine the resistance for three different resistors (A, B and C).*
- B. Determine the equivalent resistance for three different series combinations:*
- i. A and B*
 - ii. B and C*
 - iii. A, B, and C*
- C. Determine the equivalent resistance for three different parallel combinations:*
- i. A and B*
 - ii. B and C*
 - iii. A, B, and C*
- D. Determine the ratio of currents through each branch of the parallel combination A and B.*
-

Part A:

1. Sketch the circuit diagram you will use to measure the value of a single resistor.

2. Sketch the actual set-up for your circuit diagram. Make sure you have instructor approval before turning on the power supply.

3. Record your measurements on your data tables and show your calculations below.

T.I. _____

4. Record your calculated value for each resistor below.

$R_A =$

$R_B =$

$R_C =$

Part B

1. Calculate the expected equivalent resistance for each combination. Show all of your calculations.

2. Sketch the circuit diagram you will use to measure the equivalent resistance of a series combination.

3. Sketch the actual set-up for your circuit diagram. Make sure you have instructor approval before turning on the power supply.

4. Record your measurements on your data tables and show your calculations below.

T.I. _____

5. Record your calculated value for each resistor below.

a. R_{AB}

Predicted R_{eq} :

Measured R_{eq} :

Percent difference:

b. R_{BC}

Predicted R_{eq} :

Measured R_{eq} :

Percent difference:

c. R_{ABC}

Predicted R_{eq} :

Measured R_{eq} :

Percent Difference:

Part C

1. Calculate the expected equivalent resistance for each combination. Show all of your calculations.

2. Sketch the circuit diagram you will use to measure the equivalent resistance of a parallel combination.

3. Sketch the actual set-up for your circuit diagram. Make sure you have instructor approval before turning on the power supply.

4. Record your measurements on your data tables and show your calculations below.

T.I. _____

5. Record your calculated value for each resistor below.

a. R_{AB}

Predicted R_{eq} :

Measured R_{eq} :

Percent difference:

b. R_{BC}

Predicted R_{eq} :

Measured R_{eq} :

Percent difference:

c. R_{ABC}

Predicted R_{eq} :

Measured R_{eq} :

Percent Difference:

Part D

1. Calculate the expected current through each resistor if the potential difference in the power supply is 10.0 V. Show all of your calculations.

2. Sketch the circuit diagrams you will use to measure the current through each branch of the circuit.

3. Sketch the actual set-up for your circuit diagram. Make sure you have instructor approval before turning on the power supply.

4. Record your measurements on your data tables and show your calculations below.

T.I. _____

5. Record your calculated value for each resistor below.

Predicted $\frac{I_A}{I_B}$:

Measured $\frac{I_A}{I_B}$:

Percent difference:
