**Laboratory 06**: Resistor Combinations and Voltage Dividers

(Edit this document as needed)

Partner 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part A.1*

Brief description of Part A.1:

For the circuit, identify the resistors in series and the resistors in parallel

 Series: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Equivalent series resistance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Parallel: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Equivalent parallel resistance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Schematic of the equivalent circuit

*Part A.2*

|  |  |  |
| --- | --- | --- |
| VR1 | VR2 | VR1+VR2 |
|  |  |  |

Is the sum close to 3V as expected?

Calculation of the voltage across R1 using the voltage divider expression.

Calculation of the voltage across R2 using the voltage divider expression.

Do the calculations agree with measurements?

*Part B.1*

Voltmeter measurements

|  |  |
| --- | --- |
| CAV - CBVSeries resistors | CBVParallel resistors |
|  |  |

Equivalent series resistance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equivalent parallel resistance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Schematic of the equivalent circuit

Calculation of the voltage across Rseriesequivalent using the voltage divider expression.

Calculation of the voltage across Rparallelequivalent using the voltage divider expression.

Do the calculations sum to 4V as expected?

Are the calculations close to the measured results?

Voltmeter measurements of the simplified equivalent circuit

|  |  |
| --- | --- |
| CAV – CBV Series equivalent resistor | CBVParallel equivalent resistor |
|  |  |

Are the measurements in the simplified circuit close to the measurements from the original circuit?

*Part B.2*

Voltmeter measurements

|  |  |
| --- | --- |
| CAV – CBV Series resistors | CBVParallel resistors |
|  |  |

Equivalent series resistance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equivalent parallel resistance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Schematic of the equivalent circuit

Calculation of the voltage across Rseriesequivalent using the voltage divider expression.

Calculation of the voltage across Rparallelequivalent using the voltage divider expression.

Do the calculations sum to 4V as expected?

Are the calculations close to the measured results?

Voltmeter measurements of the simplified equivalent circuit

|  |  |
| --- | --- |
| CAV – CBV Series equivalent resistor | CBVParallel equivalent resistor |
|  |  |

Are the measurements in the simplified circuit close to the measurements from the original circuit?

Due: February. 10th, 2022 at 11:59 pm eastern on Gradescope

One student submits on Gradescope and adds their partner using “add group members” option on Gradescope.