**Lab - 4 Datasheet**

**Circuit Analysis – I**

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| --- | --- |
| Student Name(s) |  |
| Date Lab Performed: |  |

## **Task 1: Construct Voltage Divider Circuit and Measure Load Voltage and Source Current**

**Table 1: Load Voltage and Source Current Measurements for Voltage Divider Circuit with Specific Load Connections**

|  |  |  |
| --- | --- | --- |
| **Expected Voltage Divider Voltage Level for Load Connection (V)** | **(V)** | **(mA)** |
| 10 |  |  |
| 7.5 |  |  |
| 5 |  |  |
| 4 |  |  |

**Task 2: Compute Voltages and Currents in a Series-Parallel Circuit**

Within the space given below, show ‘**detailed step-by-step**’ calculations to compute the equivalent resistance, voltages and currents of the series-parallel circuit shown in Fig. 3 of the Lab-4 Manual and as specified in Table 2 of this worksheet.

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|  |

**Table 2: Theoretical Voltages and Currents of Fig. 3**

|  |  |  |  |
| --- | --- | --- | --- |
| **Resistor Name** | **Resistor Value** | **VR** | **IR** |
|  |  | N/A | N/A |
|  | 1000 |  |  |
|  | 820 |  |  |
|  | 1500 |  |  |
|  | 470 |  |  |
|  | 330 |  |  |
|  | 2200 |  |  |
|  | 220 |  |  |

### **Task 3: Construct the Series-Parallel Circuit and Perform Measurements**

**Table 3: Resistance Measurements**

|  |  |  |  |
| --- | --- | --- | --- |
| **Resistor #** | **Theoretical/Nominal Resistor Value** | **Measured Resistor Value** | **% error** |
|  |  |  |  |
|  | 1000 |  |  |
|  | 820 |  |  |
|  | 1500 |  |  |
|  | 470 |  |  |
|  | 330 |  |  |
|  | 2200 |  |  |
|  | 220 |  |  |

**Note:** The theoretical value for is obtained from your pre-lab calculations.

**Table 4: Voltage Measurements**

|  |  |  |  |
| --- | --- | --- | --- |
| **Voltage Name** | **Theoretical Value** | **Measured Value** | **% error** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Note:** The theoretical voltage values are obtained from your Task 2 calculations. The Measured value must be measured using the DMM and not read from the power supply unit’s display.

**Table 5: Current Measurements**

|  |  |  |  |
| --- | --- | --- | --- |
| **Current Name** | **Theoretical Value** | **Measured Value** | **% error** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Note:** The theoretical current values are obtained from your Task 2 calculations.

### **Task 4: Error Calculations**

Within the given space, show step-by-step **% error calculations** for , :

**Note:** You will still need to do % error calculations for the other parameters and complete Tables 3 – 5, but you do not need to show all calculations here. Show % error calculations only for and .

|  |
| --- |
|  |

**Conclusions:** (min 150 words. Max 300 words)

**Lab-4 Datasheet Submission Requirements**

* Make sure to write a thoughtful conclusion in the **Conclusions** section summarizing your key observations and learnings from this lab. Conclusions should be at least **150 words** long. Conclusions section is worth 5 points (the lab is worth total 100 points – Prelab: 30 pts, Hands-on Lab: 70 pts).
* **File format:** Once this Datasheet is complete, **save/convert** this word file **as a .pdf file** having a filename as: “Lab-4 Datasheet\_FirstName of Student 1\_FirstName of Student 2.pdf”. For example, if name of the two students performing the lab in a group are Tom Cruz and Morgan Freeman, respectively, then the Lab-4 Datasheet file should have the following name: “Lab-4 Datasheet\_Tom\_Morgan.pdf”.
* Check with your lab instructor about specific instructions on how to submit your Lab-4 Datasheet for assessment and grading.