**Lab - 9 Datasheet**

**Circuit Analysis – I**

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

**Table 1: Circuit 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Freq** | **Period** | **Peak-to-Peak of** | **Peak-to-Peak of** | **Peak-to-Peak of** |
| Prelab Simulation |  |  |  |  |  |
| Experimental (Measured in the Lab) |  |  |  |  |  |
| % Error |  |  |  |  |  |

**Note:** You must write the values of all parameters with proper units in the tables.

**Oscilloscope Screenshot # 1: Circuit 1**

**Oscilloscope Screenshot # 2: Circuit 1**

**Oscilloscope Screenshot # 3: Circuit 2**

**Oscilloscope Screenshot # 4: Circuit 2**

**Table 2: Circuit 2**

**Calculated Time Constant (τ) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Capacitor Voltage during Charging Phase** | | | | | |
| Time Stamp | t = 0 µs  (rising edge of source voltage VS) | t = 100 µs | t = 200 µs | t = 300 µs | t = 400 µs | t = 500 µs  (falling edge of source voltage VS) |
| From Prelab Analysis |  |  |  |  |  |  |
| Measured in the Lab (from Scope) |  |  |  |  |  |  |
| % Error |  |  |  |  |  |  |
|  | **Capacitor Voltage during Discharging Phase** | | | | | |
| Time Stamp | t = 0 µs  (falling edge of source voltage VS) | t = 100 µs | t = 200 µs | t = 300 µs | t = 400 µs | t = 500 µs  (rising edge of source voltage VS) |
| From Prelab Analysis |  |  |  |  |  |  |
| Measured in the Lab (from Scope) |  |  |  |  |  |  |
| % Error |  |  |  |  |  |  |

**Table 3: Circuit 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **R1 Voltage during Charging Phase** | | | | | |
| Time Stamp | t = 0 µs  (rising edge of source voltage VS) | t = 100 µs | t = 200 µs | t = 300 µs | t = 400 µs | t = 500 µs  (falling edge of source voltage VS) |
| From Prelab Analysis |  |  |  |  |  |  |
| Measured in the Lab (from Scope) |  |  |  |  |  |  |
| % Error |  |  |  |  |  |  |
|  | **R1 Voltage during Discharging Phase** | | | | | |
| Time Stamp | t = 0 µs  (falling edge of source voltage VS) | t = 100 µs | t = 200 µs | t = 300 µs | t = 400 µs | t = 500 µs  (rising edge of source voltage VS) |
| From Prelab Analysis |  |  |  |  |  |  |
| Measured in the Lab (from Scope) |  |  |  |  |  |  |
| % Error |  |  |  |  |  |  |

**Oscilloscope Screenshot # 5: Circuit 3**

**Table 4: Circuit 3**

**Calculated Time Constant (τ) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Inductor Current during Charging Phase** | | | | | |
| Time Stamp | t = 0 µs  (rising edge of Vs) | t = 50 µs | t = 100 µs | t = 150 µs | t = 200 µs | t = 250 µs  (falling edge of Vs) |
| From Prelab Analysis |  |  |  |  |  |  |
| Measured VR3 (from Scope) |  |  |  |  |  |  |
| Inductor Current (VR3/R3) |  |  |  |  |  |  |
| % Error |  |  |  |  |  |  |
|  | **Inductor Current during Discharging Phase** | | | | | |
| Time Stamp | t = 0 µs  (falling edge of Vs) | t = 50 µs | t = 100 µs | t = 150 µs | t = 200 µs | t = 250 µs  (rising edge of Vs) |
| From Prelab Analysis |  |  |  |  |  |  |
| Measured VR3 (from Scope) |  |  |  |  |  |  |
| Inductor Current (VR3/R3) |  |  |  |  |  |  |
| % Error |  |  |  |  |  |  |

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

**Lab-9 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-9 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-9 Datasheet file should have the following name: “Lab-9 Datasheet\_Tom\_Morgan.pdf”.
* Check with your lab instructor about specific instructions on how to submit your Lab-9 Datasheet for assessment and grading.