

ELEC-2110

Electric Circuit Analysis

FROM: Your Name Here

TO: My GTA's Name

DATE: January 18, 2018

LAB SECTION: 001

Introduction to MultiSim: DC Analysis

Introduction

A short summary of the experimental objectives in your own words.

- Should be at least 3 sentences explaining the objectives of the lab.

Exercise 1

Include your observations, empirical data, and analytical calculations obtained during the experiment. Follow the order provided by the lab manual.

- Keep your text font simple or just use this L^AT_EXtemplate (e.g., 12pt, Times New Roman/Calibri/Arial).
- You can find this L^AT_EXtemplate here: <https://www.sharelatex.com/project/5888f43e701c47ef1904bb43>
- Each part of the lab (i.e. Exercise 1, Exercise 2, etc.) should have a paragraph to itself.
- At least 3 sentences each paragraph.
- Make sure to include figures and tables that were significant for completing the lab after each paragraph. Figures and tables must be properly labeled and referenced in the text.
- When providing circuit figures, label direction of currents and define voltages.
- Hand calculations can be provided on a separate sheet of paper. Please circle your final answer.

Exercise 2

Latex can create enumerated lists...

1. First one
2. Second one
3. Third one

...or it can also make itemized lists...

- First Bullet
- Second Bullet
- You get the picture

...Latex is also great at displaying mathematical equations...

$$V = I * R \tag{1}$$

$$P = V * I = I^2 * R \tag{2}$$

$$f_0 = \frac{\omega_0}{2\pi} = \frac{1}{2\pi\sqrt{LC}} \tag{3}$$

Exercise 3

Latex offers great control over position and formatting of figures. It is also capable of referencing figures by the figure property “label:” See Figure 1 for school spirit. Clicking on a reference will link you to the page where the referenced image is contained. See this link for help with figures. https://www.sharelatex.com/learn/Inserting_Images

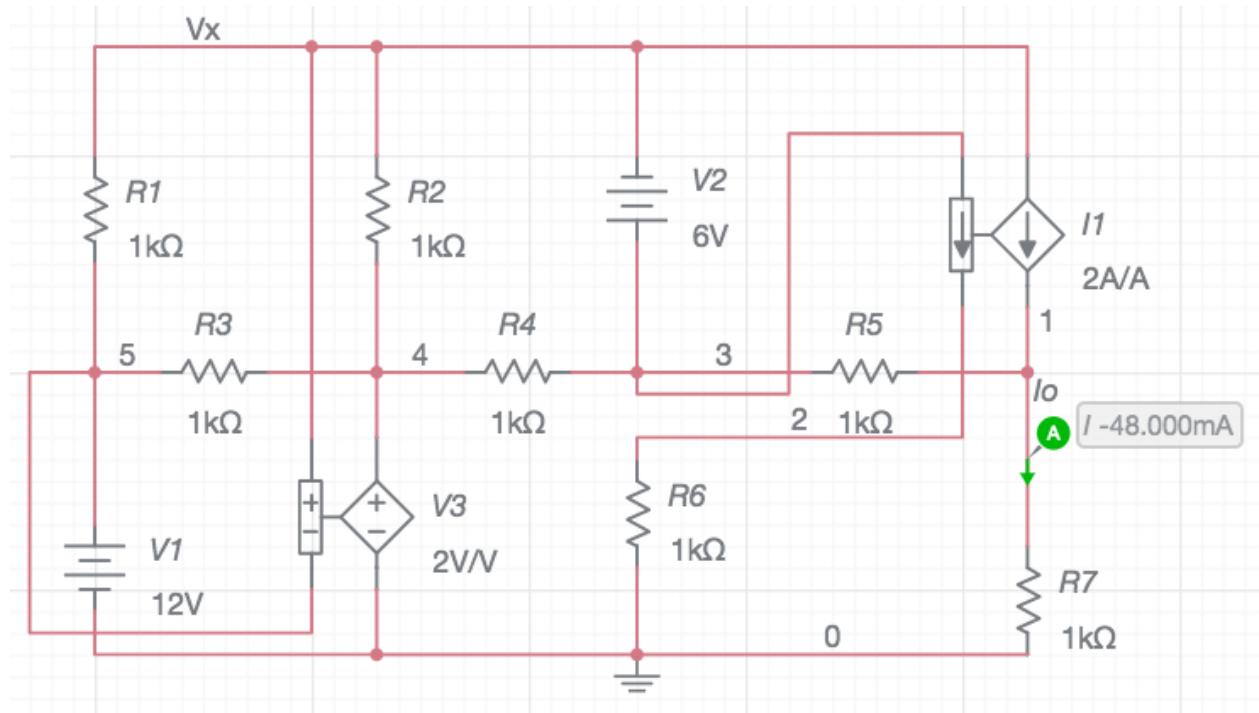


Figure 1: Exercise 5 Multisim Schematic showing I_0 current

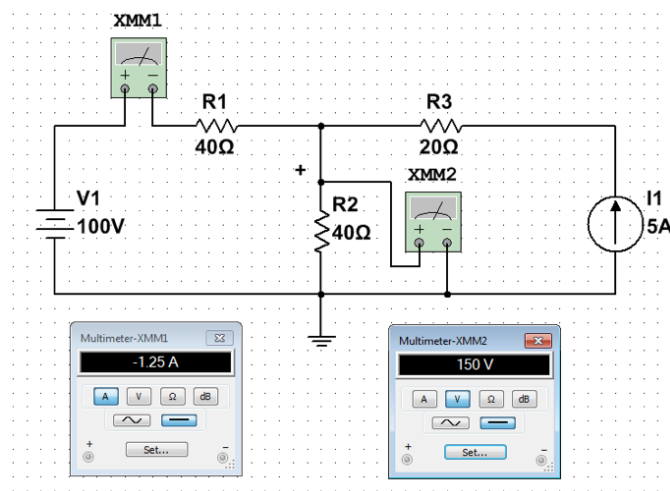


Figure 2: Multisim Schematic and Simulation Results

Exercise 4

L^AT_EX is very useful when displaying results from Matlab. For example, an M-file containing matlab code can be uploaded and displayed without having to copy-paste the code into your document. See the example in Listing 1 for an example.

```

function graph_membership(members)
2  % Create Membership Function Graphic
members_length = length(members);
4  members_range = max(members);

6  a = linspace(0, members_range, 200);
a_length = length(a);
8
f = zeros(a_length, members_length);
10
for j=1:a_length,
12     f(j,:)=fuzzify(a(j), members);
end
14
hold on;
16 for i=1:members_length;
    plot(a,f(:,i), 'k');
18 end
hold off;

```

Listing 1: Example Matlab Code

Exercise 5

A summary of results should be displayed in a table. Table 1 shows how you can

Voltage	Measured	Analytical
Unloaded Source	15.64 V	15.0 V
V_s	15.62 V	15.0 V
V_1	5.51 V	5.5 V
V_{eq}	10.11 V	11.0 V
V_a	-5.49 V	-5.50 V
V_b	-10.09 V	-10 V

Table 1: Measured voltages as well as analytically values found using KVL.

Exercise 6

These links will direct you to resources that were useful in creating this document. Notice they're all from the same website...it's a good resource. Do some exploring there.

- Hyperlinks: <https://www.sharelatex.com/learn/Hyperlinks>
- Referencing: https://www.sharelatex.com/learn/Cross_referencing_sections_and_equations
- Math Expressions: https://www.sharelatex.com/learn/Mathematical_expressions
- Images: https://www.sharelatex.com/learn/Inserting_Images
- Tables: <https://www.sharelatex.com/learn/Tables>

Conclusion

Talk about anything you learned during the lab. Discuss any issues that occurred and how you resolved them. At least 3 sentences.

In this document we've provided you with a good foundation for working with L^AT_EX and making quality, professional technical documentation. This is a program used by almost every organization that is serious about publishing scientific and technical research. Use of L^AT_EX is not required for this class, but if you begin to use it regularly it will become a powerful tool to prepare you for future success.

As GTA's, it is our hope that we can provide you with the skills and tools necessary to turn you in to competent, successful engineers. We can show you the door, but you must open it yourself. The quality of the work you produce is up to you. Best of luck, and have fun! Love,

-Markus K. & Shane W.

*Bibliography If you wish to include a bibliography, edit the my bibliography file and add the following lines to your document. You can, for example, cite your Lab report [2] or something else [1]

Bibliography

- [1] Freescale Semiconductor Inc. “ $\pm 1.5g$, $\pm 6g$ Three Axis Low-g Micromachined Accelerometer”. In: (Apr. 2008). URL: <https://www.sparkfun.com/datasheets/Components/General/MMA7361L.pdf>.
- [2] Suraj Sindia Elizabeth Devore Bei Zhang. “EXPERIMENT 1 Introduction to MultiSim”. In: (May 2016). URL: ftp://ftp.eng.auburn.edu/pub/irwinjd/lab_manuals/Lab%201_Multisim_Introduction%20and%20DC%20Analysis.pdf.