

Tanisha Lab Reports

by Tanisha Bath

FILE	16956_TANISHA_BATH_TANISHA_LAB_REPORTS_108763_1070928312.D OCX (41.24K)		
TIME SUBMITTED	11-DEC-2019 11:13AM (UTC+0000)	WORD COUNT	1029
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Finding the characteristics of a component

Lab 1

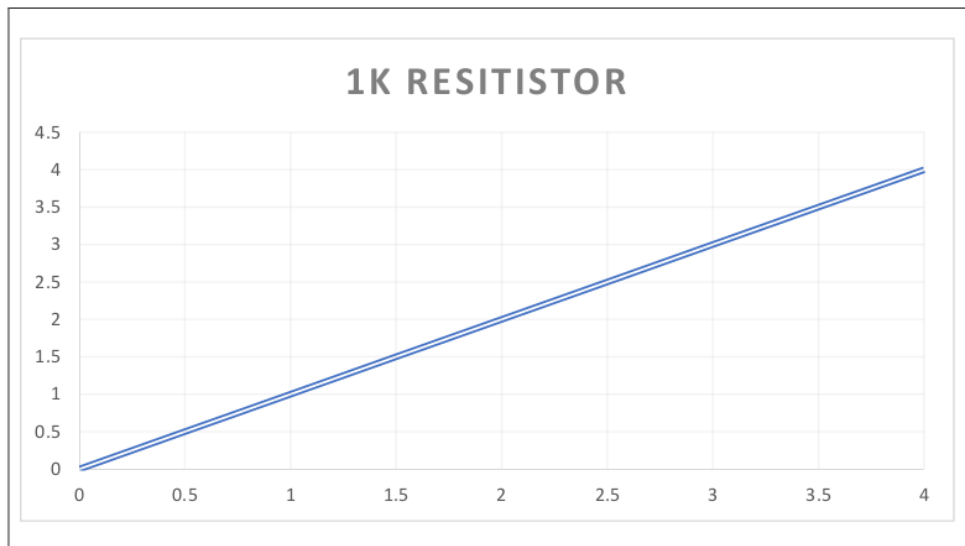
Download and run the resistive characteristics proteus lab from Moodle.

1. Ensure that the k resistor is connected in the circuit.
2. Modify the battery voltage to give 0.5V
3. Read the voltage and current in mA and record it in the table below
4. Stop the simulation and modify the voltage of the battery to match the table voltage.
5. Run the simulation
6. Repeat steps 3 to 5 until the table is completed.
7. Stop the simulation
8. Disconnect the resistor and connect the lamp.
9. Repeat steps 2 to 6
10. Disconnect the lamp and connect the thermistor.
11. Repeat steps 2 to 6

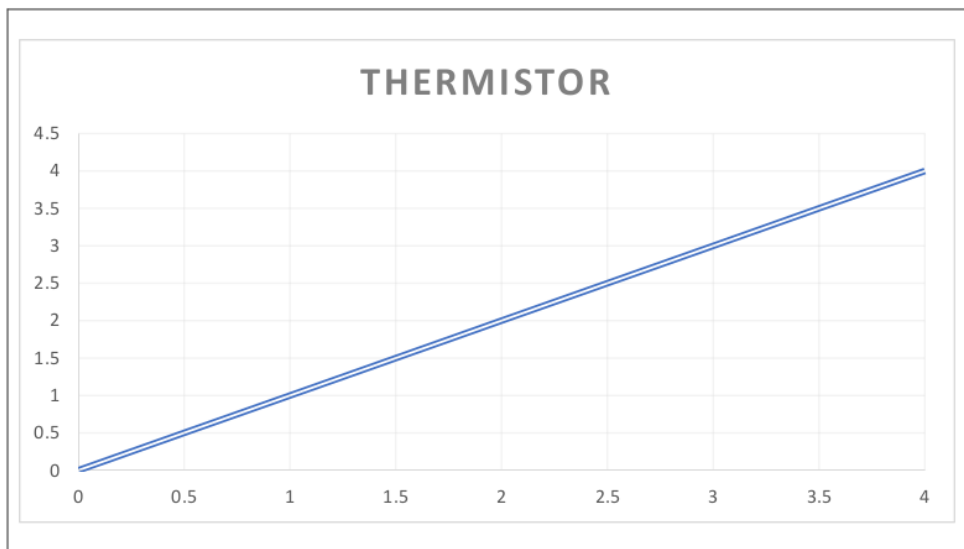
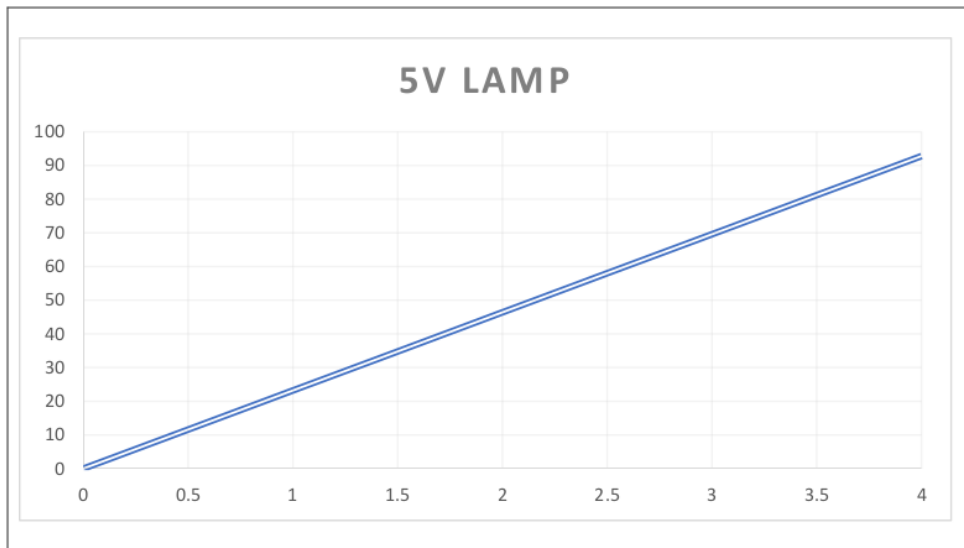
	1K Resistor	5V Lamp	Thermistor
0	0	0	0
0.5	0.50	11.6	0.50
1.0	1.00	23.2	1.00
1.5	1.50	34.8	1.50
2.0	2.00	46.4	2.00
2.5	2.50	58	2.50
3.0	3.00	69.6	3.00
3.5	3.50	81.2	3.50
4.0	4.00	92.8	4.00

Questions

- a. Draw graphs of these results, clearly identifying which graph relates to which component.



Finding the characteristics of a component



- b. Using the graph calculate the resistance of the 1K resistor. Explain your calculation

$$2V = 2mA \text{ from graph}$$
$$R = \frac{V}{I} = \frac{2}{0.002} = 1K$$

- c. Comment on the shape of the graph for the lamp. Calculate its minimum and maximum resistances.

Straight line increase

$$R = V/I = 0.5/0.0116 = 43 \text{ Ohms}$$

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Lab 2

Examination of Capacitive discharge curve

1. Use the circuit in Lab "Capacitive discharge curve"
2. Close the switch and run the circuit for 1 sec by accessing the debug menu and clicking on run simulation (timed breakpoint) and enter 1 sec in the box and press ok.
3. Take a reading and fill in the box below.
4. Open the switch
5. Access the debug menu and click on run simulation (timed breakpoint) and enter 10 sec in the box and press ok.
6. Take a reading and fill in the box below.
7. Repeat actions 5 and 6 until the reading is below 0.05V
8. Transfer the numbers to a spread sheet and graph the values.

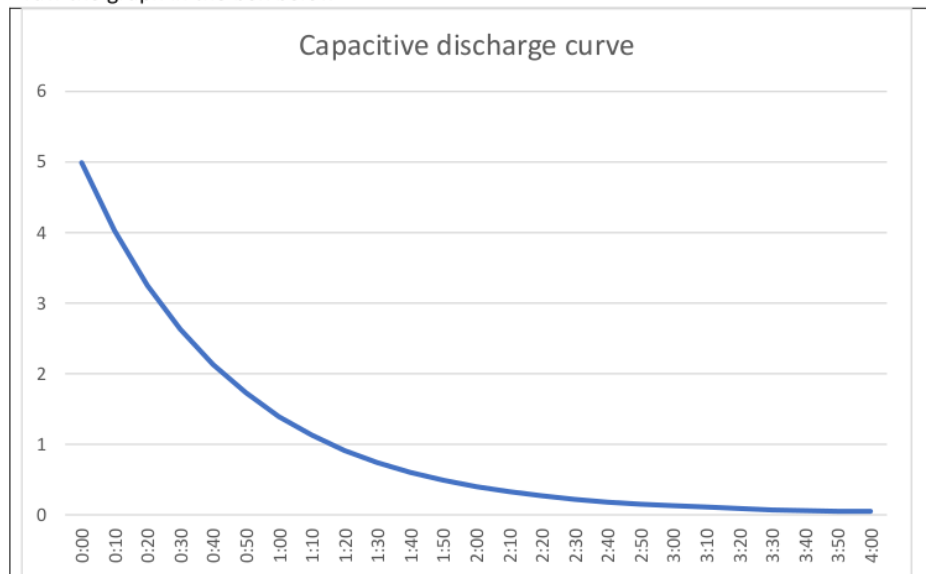
1	11	21	31	41	51	61	71	81	91
4.99	4.03	3.25	2.63	2.13	1.73	1.39	1.13	0.91	0.74

101	111	121	131	141	151	161	171	181	191
0.6	0.49	0.4	0.33	0.27	0.22	0.18	0.15	0.13	0.11

201	211	221	231	241	251	261	271	281	291
0.09	0.07	0.06	0.05	0.05					

301	311	321	331	341	351	361	371	381	391

9. Draw the graph in the box below



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Lab 3

Download and run the non-inverting proteus lab from Moodle.

12. Close the switch to the 10K resistor R_i .

13. Close the switch to the 10K resistor R_f .

14. Set the signal generator to give a 1kHz sine wave with 1V peak to peak amplitude.

Q1. What do you expect to see on channel A of the oscilloscope?

- a) A 2volt p-p sine wave in phase with channel B ☒
- b) A 1volt p-p sine wave in phase with channel B ☐
- c) A 2volt p-p sine wave inverted (phase shifted by 180°) ☐
- d) A 1volt p-p sine wave inverted (phase shifted by 180°) ☐

15. Set R_i , R_f and the input voltage to match the values in the table and measure the input and output voltages on the oscilloscope and fill up the table below.

If the output is in phase with the input enter 0° in the phase change column or enter -180° if the output is inverted

R_i k Ω	R_f k Ω	Calculated gain	Input V (p-p)	Output V (p-p)	Measured Gain	Phase change
10	10	2	4V p-p	8	2	0
10	100	11	0.7 p-p	7.8	11	0
1	100	101	0.1 p-p	10	100	0

Q2. What do you conclude from this experiment?

- a. The gain changes by the ratio $1+R_f/R_i$ and the output is inverted relative to the input ☐
- b. The gain changes by the ratio $1+R_f/R_i$ and the output is inverted relative to the input ☐
- c. The gain changes by the ratio $1+R_f/R_i$ and the phase is not inverted relative to the input ☒
- d. The gain and phase θ both change with the ratio of $1+R_f/R_i$. ☐

Q3. Which of the following statements is true?

- a. The phase shift increases as gain is increased. ☐
- b. The phase shift does not change with gain. ☒
- c. The phase shift decreases as gain is increased. ☐

Finding the characteristics of a component

Lab 4

Download and run the inverting proteus lab from Moodle.

16. Close the switch to the 10K resistor Ri.

17. Close the switch to the 10K resistor Rf.

18. Set the signal generator to give a 1kHz sine wave with 1V peak to peak amplitude.

Q1. What do you expect to see on channel B of the oscilloscope?

- e) A 2volt p-p sine wave in phase with channel A ☐
- f) A 1volt p-p sine wave in phase with channel A ☐
- g) A 2volt p-p sine wave inverted (phase shifted by 180°) ☐
- h) A 1volt p-p sine wave inverted (phase shifted by 180°) ☒

19. Set Ri, Rf and the input voltage to match the values in the table and measure the input and output voltages on the oscilloscope and fill up the table below.

If the output is in phase with the input enter 0° in the phase change column or enter -180° if the output is inverted

Ri k Ω	Rf k Ω	Calculated gain	Input V (p-p)	Output V (p-p)	Measured Gain	Phase change
10	10	1	4V p-p	4	1	-180
10	100	10	0.7 p-p	7	10	-180
1	100	100	0.1 p-p	10	100	-180

Q2. What do you conclude from this experiment?

- e. The gain changes by the ratio R_f/R_i and the output is inverted relative to the input ☐
- f. The gain changes by the ratio R_f/R_i and the output is inverted relative to the input ☒
- g. The gain changes by the ratio R_f/R_i and the phase is not inverted relative to the input ☐
- h. The gain and phase θ both change with the ratio of R_f/R_i . ☐

Q3. Which of the following statements is true?

- d. The phase shift increases as gain is increased. ☐
- e. The phase shift does not change with gain. ☒
- f. The phase shift decreases as gain is increased. ☐

Tanisha Lab Reports

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

Instructor

70/100

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GRADING FORM: SMU GENERIC_GJ

TANISHA BATH

70

RESEARCH-INFORMED LITERATURE

KNOWLEDGE AND UNDERSTANDING

ANALYSIS

PRACTICAL APPLICATION AND DEP.



Clear results and good graphical data. 70%

70

SKILLS FOR PROFESSIONAL PRAC.