

EE311 Exp. #1

Diode Characteristics

Report #1

**COURSE LECTURER:**

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Prepared by

Name:

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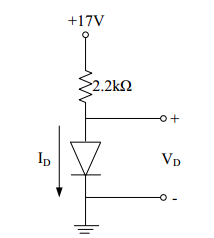
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***CAUTIONARY REMARK: All questions will be answered in the assigned blanks. Don’t use extra place for the answers due to the fact that they are not guaranteed to be evaluated.***

**Part 1--Introduction:** Explain the main objective of the first experiment on your own words. (10pts)

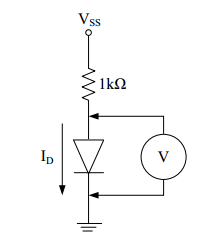
**Part 2--Procedure: a) Conventional Diode Basics:** Describe and of conventional diode in mathematical expression. Comment on the meaning of those. (10pts)

**b)** Solve Figure.1 using linear diode model. Take as , (10pts)



**Figure.1**

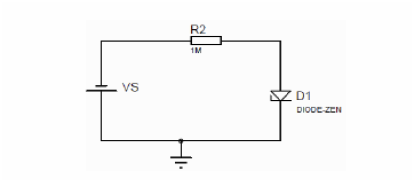
**c)** Plot versus and versus using your measurements during the lab by considering the Figure.2. (20pts)



**Figure.2**

**d)** Plot versus and versus by using LT-Spice considering the Figure.2. Compare lab measurements and simulation results for Figure.2. If you have any differences, comment on them. (**Important Note:** Not use spice default libraries or models when you use diodes. You must utilize from a diode model presented in the *appendix part*.) (30 pts)

**e) Research** *‘zener diodes’* and solve the following circuit by taking as VS =20V, R2=1MΩ and D1 is zener diode whose Vz = 6V. (**Hint:** Vz is equal to zener voltage.) (15pts)

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**Part-3--Conclusion:** Conclude your report with your learning from this experiment on your own words. Moreover, you can discuss or criticize some over-expected or under-expected sides of the experiment. (10pts)

**Part-4--References:** If you have referred parts, specify their references below. (5pts)

**Part-5--Appendix:**

You will use the following diode model for LT-Spice simulations:

.model Da1N4004 D (IS=18.8n RS=0 BV=400 IBV=5.00u CJO=30 M=0.333 N=2)