ELE 4142 HW1 Name_____

1 – Identify each resistor value 20pts




_____ _____ _____ _____ _____

2 – Plot the current in a P-N Diode vs $V_A$ from -0.4V to 0.8V in 0.2V increments.
Assume $I_S$ = 1e-11A, n = 1.7, and $V_T$ = 26mV 20 pts

ELE 4142 HW1 Name_____

3 – ELE 2610 is switching to a new STM part (STM32U575xx) this year. The data sheet for this part family is linked on the HW page. Below is a picture of the part as implemented on the development board. Answer the following questions: 30 pts


Package type (be specific): _____

What does the L stand for: _____

Circle PIN 1

How tall is this part (mm): _____

How many pins are dedicated to: VDD ___ GND/VSS ___

What is the allowed temperature range for this part ___ to ___°C

What is the $ESD_{HBM}$ rating for this part _____ V

Compare the required board area for this part vs the UFBGA169 with more pins available

ELE 4142 HW1 Name_____

4 – ELE 2610 is switching to a new STM part (STM32U575xx) this year. The data sheet for this part family is linked on the HW page. Operating this part at 3.3V, 160MHZ, and using a specific program profile the part dissipates 1W internally. While most of the I/Os drive CMOS gates, 10 of them drive 10KΩ resistors tied to gnd. 30 pts

Determine the worst-case junction temperature this part would reach.

Is this a problem? If yes, why?