ELE 3510 HW1 Name_____

1 – Research: Identify one additional common Si donor atom (not P) and one additional common Si acceptor atom (not B) 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 30 pts

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3 – A device that operates at 2.4V has approximately 250M reversed biased diodes (junction diodes). If the average junction diode has: $I_S$ = 2e-11A, n = 1.5, and $V_T$ = 26mV, what is the current and power used by this device when it is powered up and idle. 30pts

| I = |
| --- |
| P = |

4 - What would the idle battery life of this device be if it used a 2.4V coin battery with a 1AH capacity. 20pts