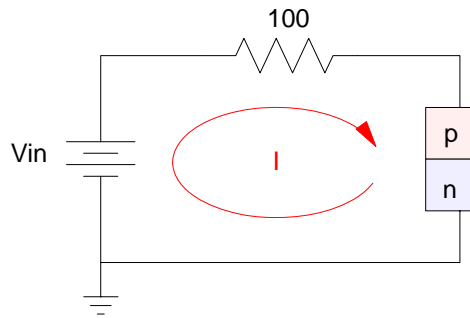# ECE 320 - Homework #2

PN Junctions, Diodes, Ideal Diodes. Due Wednesday, September 7th

1) A 100 Ohm resistor and a pn junction are in a circuit:
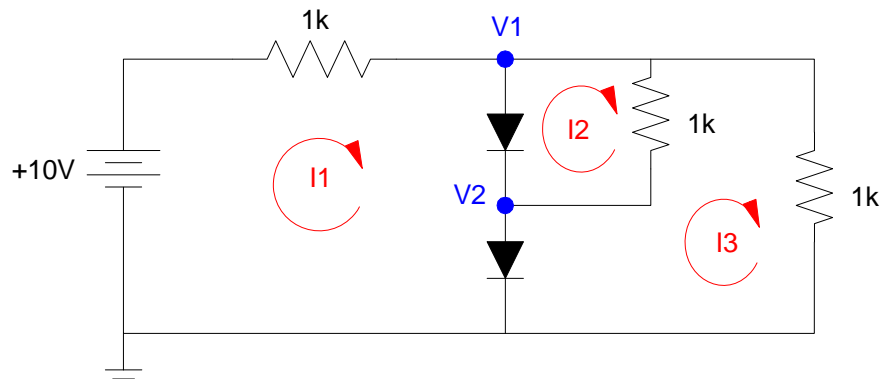

1a) Will current flow if Vin = +10V? Explain why or why not.

1b) Will current flow if Vin = +10mV? Explain why or why not.

1a) Will current flow if Vin = -10V? Explain why or why not.

Problem 2 - 7) Use the following circuit:

$$V_d = 0.052 \ln \left(10^7 \cdot I_d + 1 \right) \qquad I_d = 10^{-7} \cdot \left(\exp \left(\frac{V_d}{0.052} \right) - 1 \right)$$

2) Write the voltage node equations for the above circuit (don't solve)

3) Write the current loop equations for the above circuit (don't solve)

4) Determine the voltages and currents assuming ideal silicon diodes.

5) Determine the voltages and currents using PartSim (or other simulation software)

Lab

6) Determine the voltages and currents using real silicon diodes.