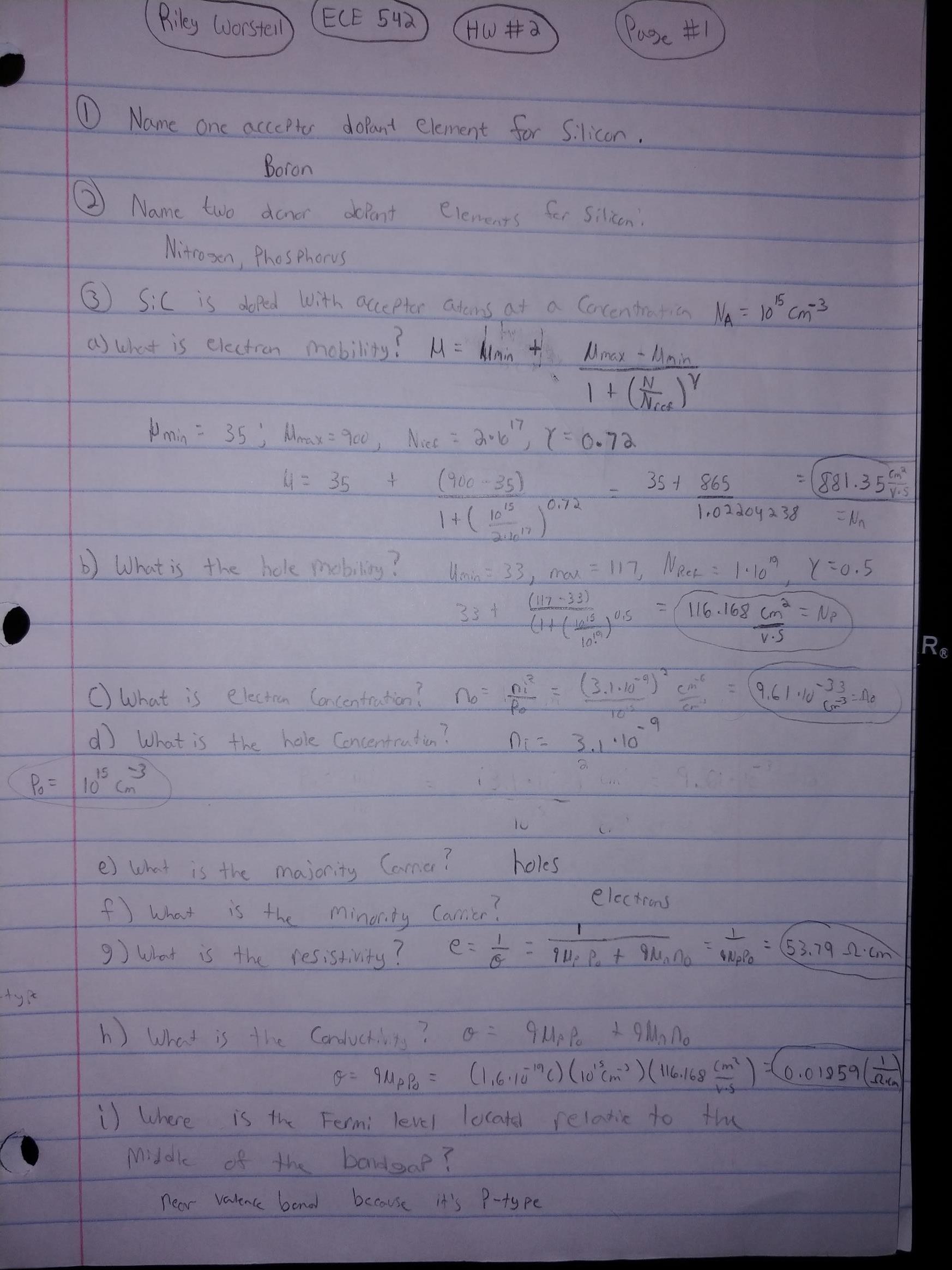
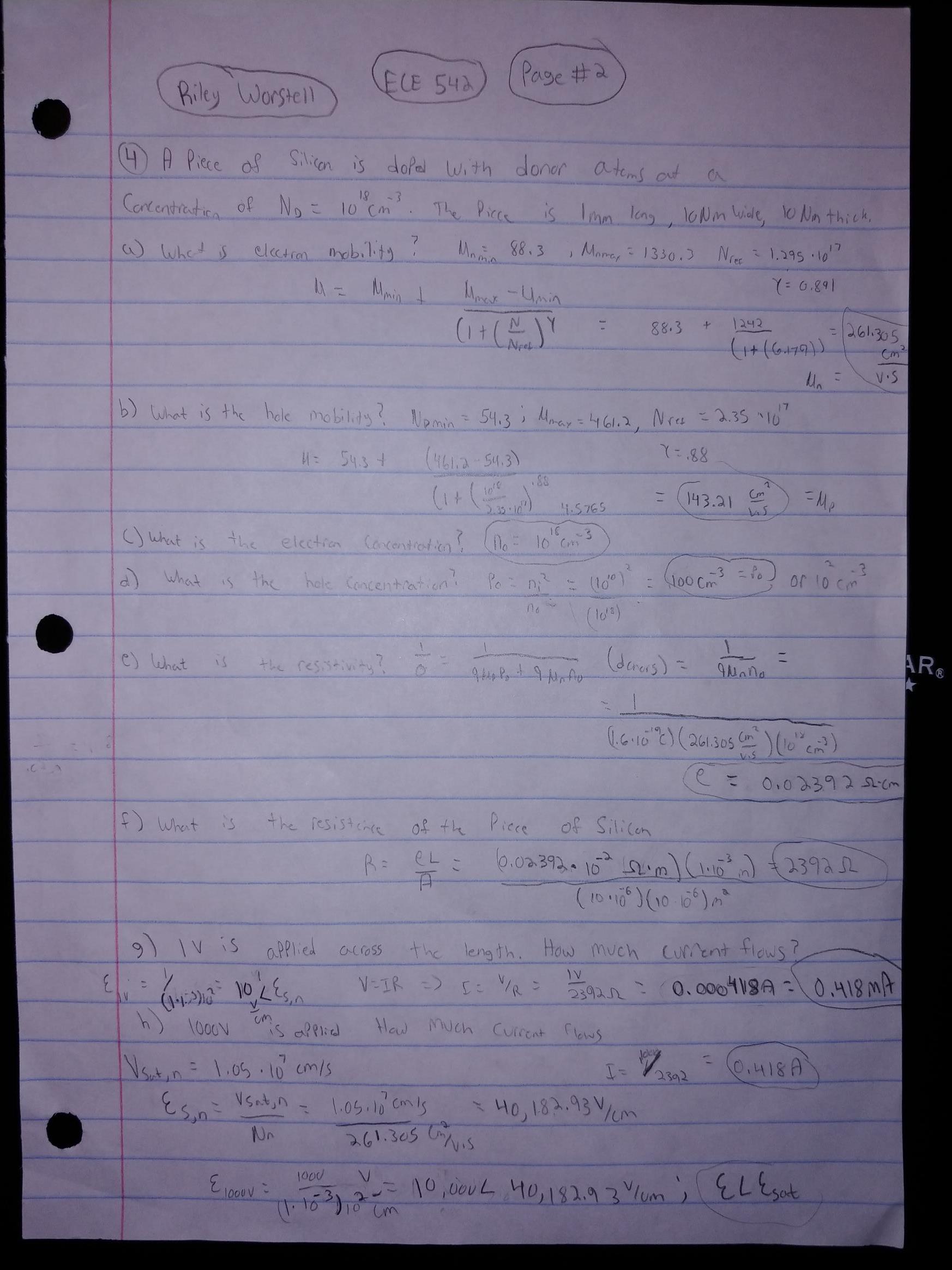
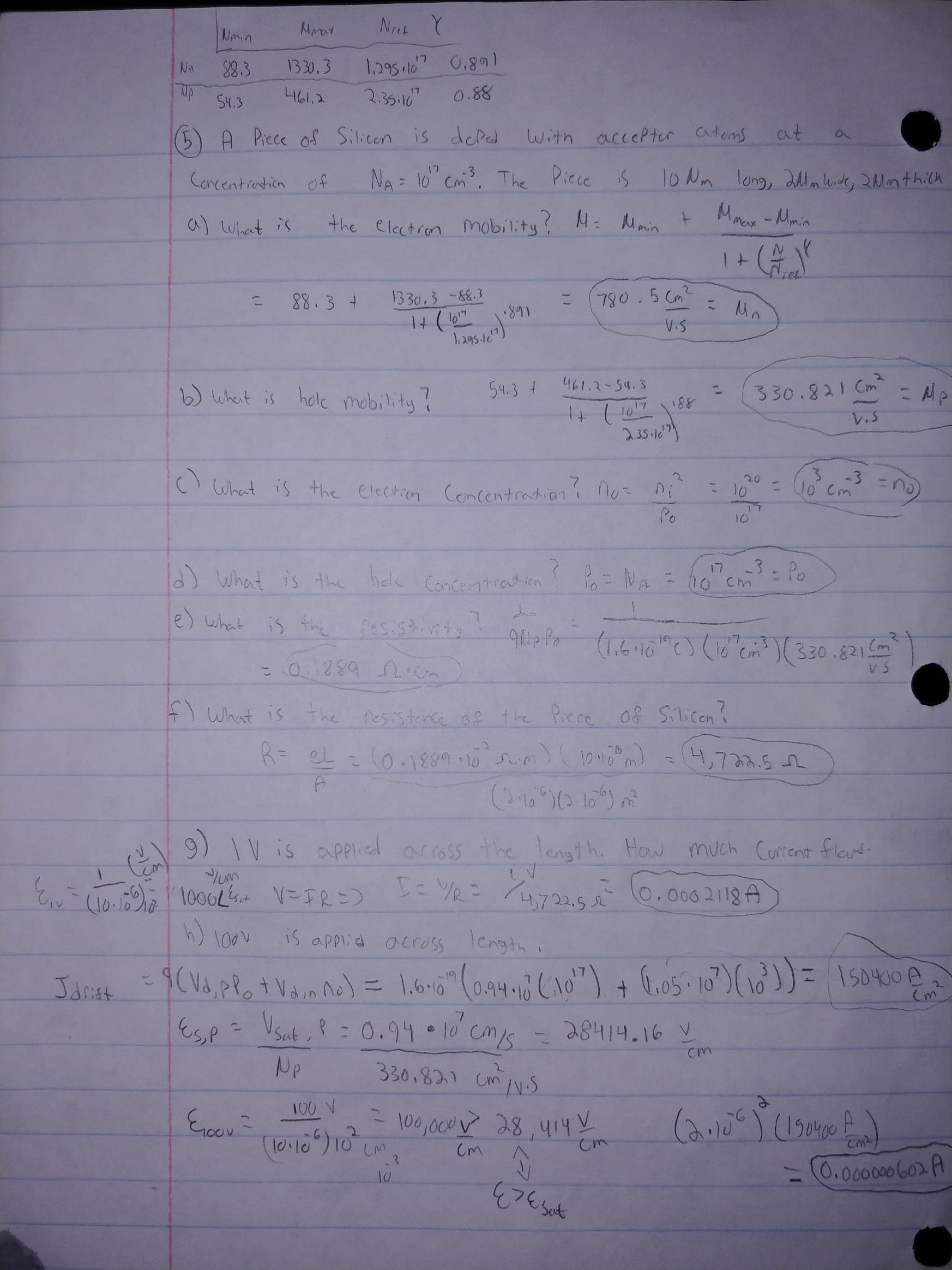
**Riley Worstell**

**ECE 542**

**HW 2**







6)

CODE:

import pylab  
import matplotlib.pyplot as plt  
import math  
  
Si\_NC = (3.51\*(10\*\*19))  
Si\_NV = (1.87\*(10\*\*19))  
Si\_BG = 1.12  
K\_b = 0.00008617  
  
  
my\_temps = []  
some\_temp = 200  
for i in range(401):  
 my\_temps.append(some\_temp)  
 some\_temp = some\_temp + 1  
  
  
Ni\_Si = []  
  
for i in my\_temps:  
 x = Si\_NC \* ((i/300)\*\*1.5)  
 y = Si\_NV \* ((i / 300) \*\* 1.5)  
 z = ((x\*y\*(math.exp(-(Si\_BG/(i \* K\_b)))))\*\*.5)  
 print(z)  
 Ni\_Si.append(z)  
  
  
plt.plot(my\_temps, Ni\_Si)  
plt.yscale('log')  
plt.xlabel("Temperature")  
plt.ylabel("Intrinsic Carrier Concentration")  
plt.show()

PLOT:

