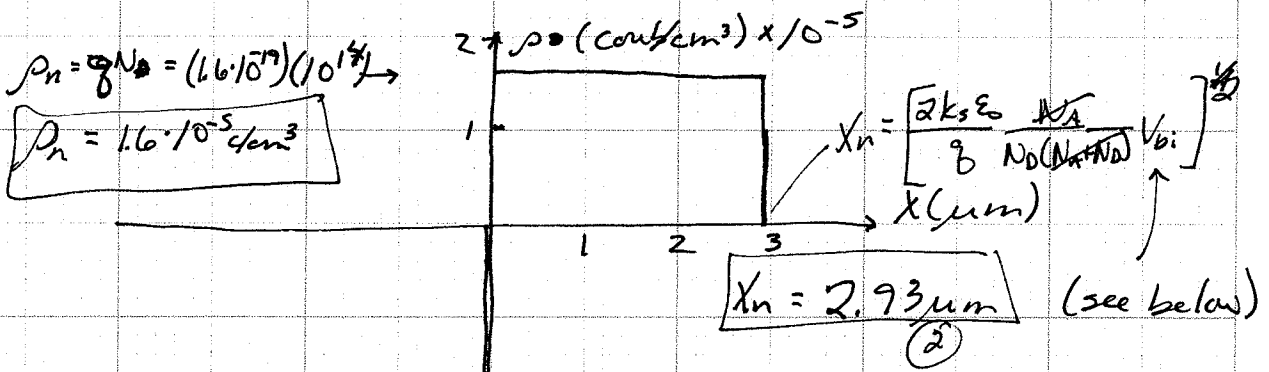
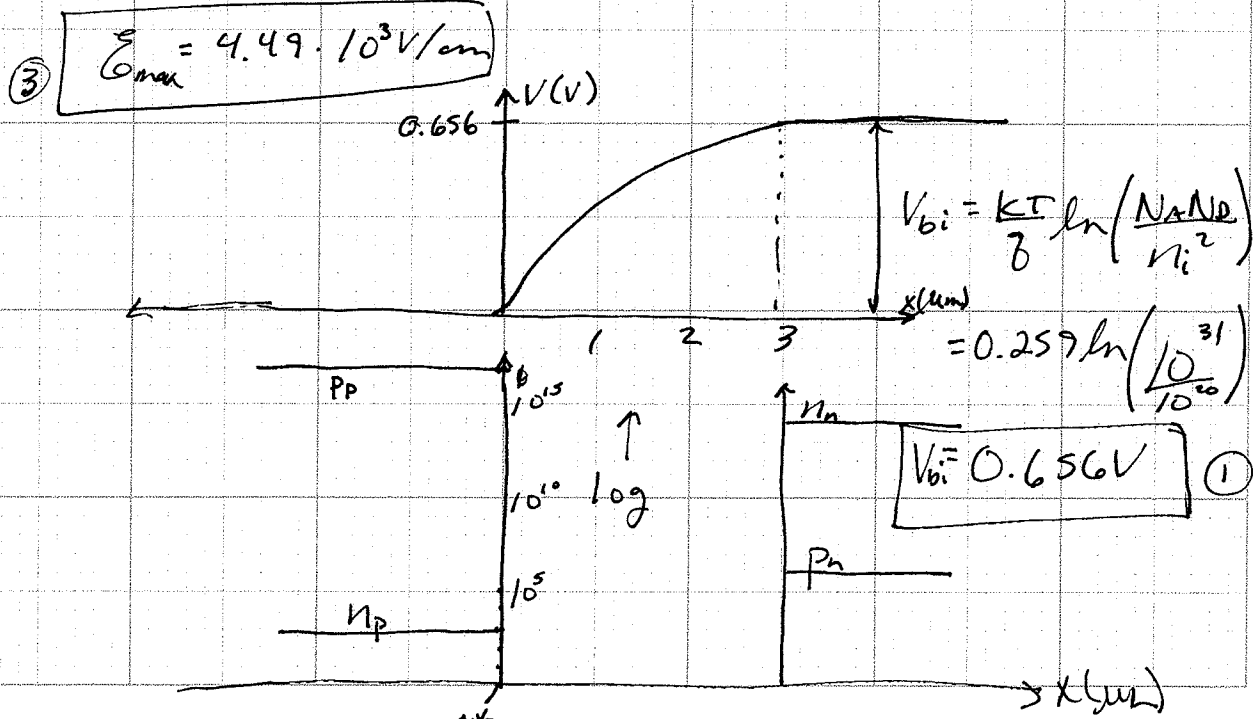
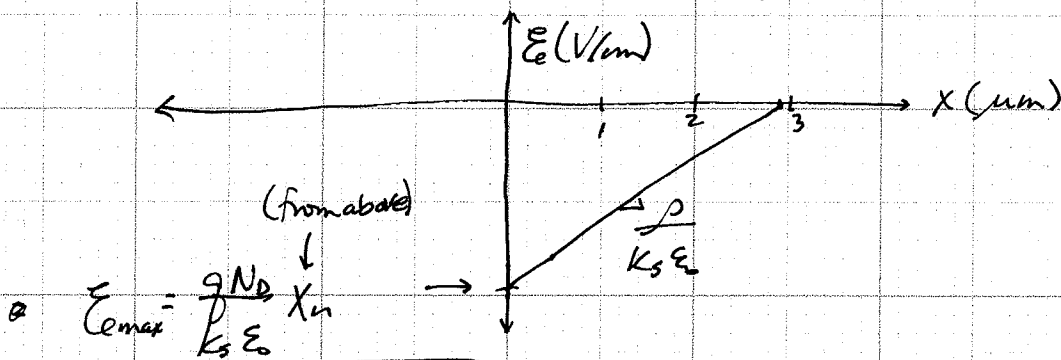


a) $p = N_A = 10^{17}$ Boron $n = 10^3$ $n = N_D = 10^{14}$ Phosphorus $p = 10^6$



$x_p = \frac{x_n}{1000}$ (20 on this scale) $= 2.93 \mu\text{m} = x_p$

$\rho_p = q N_A = 1.6 \cdot 10^{-2} \text{ cm}^3 = \rho_p$



b)

0.417 eV

0.656 eV

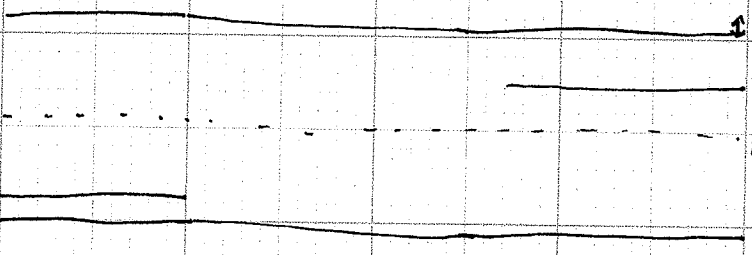
$$E_F - E_i = kT \ln \left(\frac{N_D}{n_i} \right) = 0.239 \text{ eV}$$

E_F
 E_i } 0.239 eV



0.6 + 0.656 V
= 1.256 V

E_c



0.056 V

E_c

c)

