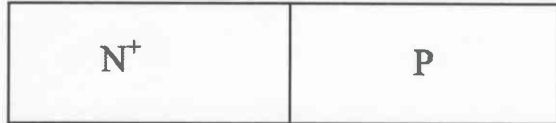


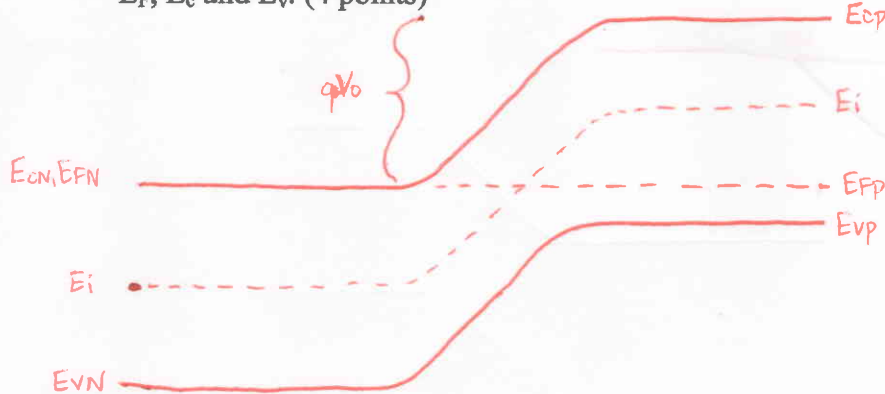
ECE 340: Quiz #2, V4

Name: Solutions

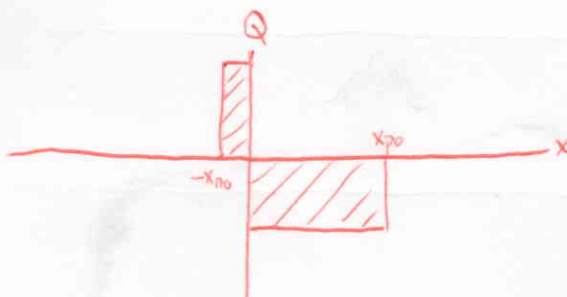
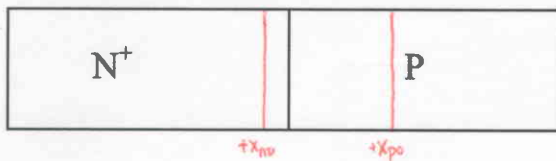
Consider a N^+ -P junction shown below



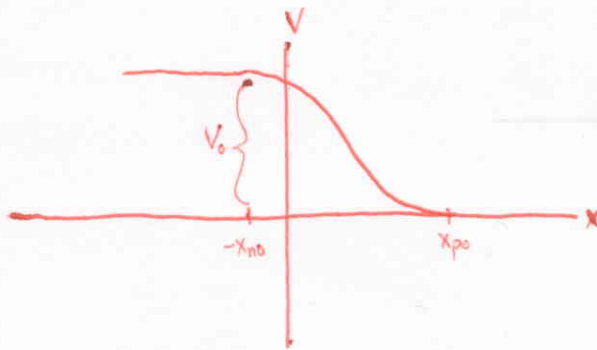
- 1) Draw the energy band diagram at equilibrium and indicate schematically the position of E_i , E_F , E_c and E_v . (4 points)



- 2) On the schematic diagram below, please indicate the relative extension of the depletion regions x_{n0} and x_{p0} on each side of the junction at equilibrium. Also plot schematically the space charge density profile. (4 points)



3) Plot the potential profile and the electric field profile as a function of distance from the junction, paying attention to relative scale and indicating x_{n0} and x_{p0} . (2 points)



since $N_D \gg N_A \rightarrow x_{p0} \gg x_{n0}$

