Problem 1 – Howe and Sodini P2.4

Problem 2 – Howe and Sodini P2.6

Problem 3

 Consider a bar of silicon in thermal equilibrium. A plot of the potential vs. x is shown below. (It linearity falls from 0.42V at x = 0 to 0.24V at x = 6 μm) Assume that the reference for this potential $\phi = 0$, when $n_o = p_o = n_i$.
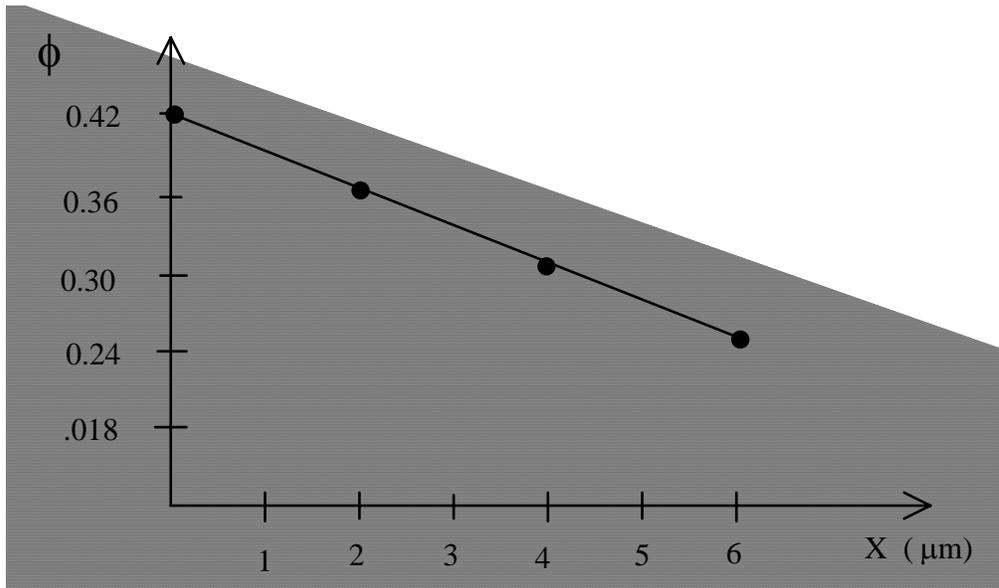
a) Plot the electron and hole concentration vs. x from $0 \le x \le 6$ μm.

b) Plot the electric field vs. x.

For parts c-d assume $\mu_n = 1000$ cm^2/V-sec

c) Calculate the electron drift current density vs. x.

d) Calculate the electron diffusion current density vs. x.

Problem 4 – Howe and Sodini – P2.10a

Problem 5 – Howe and Sodini – P2.11a

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