Homework #4 - due Tuesday, 23 March 2009, in class

1. A Silicon sample with $10^{15}$ cm$^{-3}$ donors is uniformly optically excited at room temperature such that $10^{19}$ cm$^{-3}$ electron hole pairs are generated per second. Find the separation of the quasi-Fermi levels and the change in conductivity (i.e. the photoconductivity) upon shining the light. Electron and hole lifetimes are both 10 μsec, and $D_p = 12$ cm$^2$ s$^{-1}$.

2. Problem 5.1 in chapter 5, Muller & Kamins, p. 274 in 3rd edition. Hint for (b): use the SHR equation and neglect p and n terms only if they are relatively small.

3. Problem 5.2 in chapter 5, Muller & Kamins, p. 274 in 3rd edition. Hint: neglect only relatively small terms and assume low level injection.

Homework assignments will appear on the web at:
http://www.ece.udel.edu/~kolodzey/courses/eleg646s10.html

Note: On each homework and report submission, please give your name, the due date, assignment number and the course number.