

ELEG 340: Solid-State Electronics, Fall 2008

Homework #10 (rev)- due Tuesday, 25 November 2008, at the beginning of class

1. Problem 6.1, p. 326 of Streetman-Banerjee, 6th edition. Hint: recall that our lecture definition of pinch-off voltage, V_P , is the same as the text's.
2. Compare the empirical square law $I_D - V_G$ characteristic, eqn. (6-12) in text, to the more quantitative eqn. (6-10), and calculate an analytical expression for I_{DSS} in terms of G_O and V_P (and any other factors you may need). Hint: pick a particularly simple value of V_G for your comparison.
3. Problem 6.2 (for $V_G = -4$ volts only); p. 326 of Streetman-Banerjee, 6th edition.
4. Problem 6.4 (for $V_G = -2$ volts and $V_D = 4$ volts only, i.e. in the saturation region beyond pinch-off); p. 326 of Streetman-Banerjee, 6th edition.
5. Problem 6.6 (a) only; p. 327 of Streetman-Banerjee, 6th edition. Hint: in the binomial expansion, use only the first 2 terms: $(1+x)^{3/2} \approx 1 + 3/2 x$.

Homework assignments will appear on the web at:
<http://www.ece.udel.edu/~kolodzey/courses/eleg340f08.html>

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