ECE 2C Homework #5 Due: Wednesday 11/18/09 at 5 PM

Relevant readings:
S&S Section 6.2 – 6.7

4 problems

(1) [10 pt.] S&S Problem 6.26 {Complementary MOS (CMOS) current-steering circuits, which employs both NMOS and PMOS current mirrors to generate DC bias currents.}

(2) [10 pt.] S&S Problem 6.34 **with $\beta = \infty$ and $\beta = 99$**. {BJT current-steering circuits.}

(3) [10 pt.] S&S Problem 6.12 {Comparison of small-signal model parameters for a MOSFET and a BJT.}

(4) [10 pt.] S&S Problem 6.65. {PNP common-emitter amplifier with active load.}

(5) [10 pt.] S&S Problem 6.75. {Frequency response of common-source amplifier with active load. Note: in practice, a large bypass capacitor is added to the gate of Q_2 and Q_3 to ensure that its ac signal is zero. A possible source of ac signal is coupling through the C_{gd} of Q_2 from the output to the gate of Q_2, which in turn introduce an ac component to the I_D of Q_2.}

(6) [10 pt.] S&S Problem 6.93. {NPN common-base amplifier as a "current buffer".}