

ENEE 302 Homework Set 3 Due Th 02/24/05

For CMOS transistors in these problems use the mnmosis and mpmosis transistors with (unless otherwise specified) $L=W=10\mu$, $V_{dd}=5V=-V_{ss}$.

#1. 50 points

- a) Problem 5.112 of page 531, but use $\beta=100$
- b) Repeat but move the voltage source v_i and its capacitor onto the base.
- c) Replace the current source with a BJT (with the same β) current source.

#2. 25 points

- a) Problem 4.54 of page 367.
- b) For the same circuit run Spice and check the results using the mnmosis transistors with the same W/L ratios given in the problem but the smallest dimension being 4 microns.

#3 25 points

Problem 4.76 of page 370 (here these are not mnmosis/mpmosis transistors). Note that if L is given in microns, for calculating V_A ignore the microns, thus, if $V_A=5L$ and L is 10microns, then for this problem $V_A=50$.