EE534 Homework Set 4
Oct. 1, 2010
Due Date: Oct. 11, 2010

TEST ANNOUNCEMENT:
The second test is scheduled for October 15th.

HOMEWORK SET 4:
The goal of homework set 3 is to calculate the V_{IL}, V_{IH}, NM_L, NM_H, V_{th}, t_{PHL} (avg. current), t_{PHL} (exact), t_{FALL} (avg. current), and t_{FALL} (exact) for a CMOS inverter.

Write down your J number here:

J								

If you have any "0's" in your number, replace them with the last non-zero digit. (Example: J00180950 becomes J55185955.)

J								

C_{LOAD} in pF
(W/L)p
(W/L)n

Example: Last 3 = "562"
C_{LOAD} = 2 pF
(W/L)p = 6
(W/L)n = 5

Some additional information:
$\mu_n C_{ox} = 100\ \mu A/V^2$
$\mu_p C_{ox} = 40\ \mu A/V^2$
$V_{dd} = 5.0$ V
$V_{t,n} = 1.0$ V
$V_{t,p} = -0.7$ V

Compute the following values:
V_{IL}
V_{IH}
NM_L
NM_H
V_{th}
t_{PHL} (average current method)
t_{PHL} (exact method)
t_{FALL} (average current method)
t_{FALL} (exact method)

Hint: See Example 5.4, Equation 5.71, Equation 6.22b, and Example 6.2.

Format: The cover sheet of the homework set should show your name, J number, and the values to be calculated (V_{IL}, V_{IH}, NM_L, NM_H, V_{th}, t_{PHL} (avg. current), t_{PHL} (exact), t_{FALL} (avg. current), and t_{FALL} (exact)).