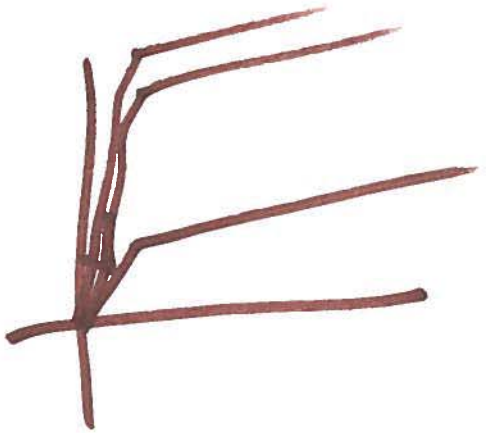
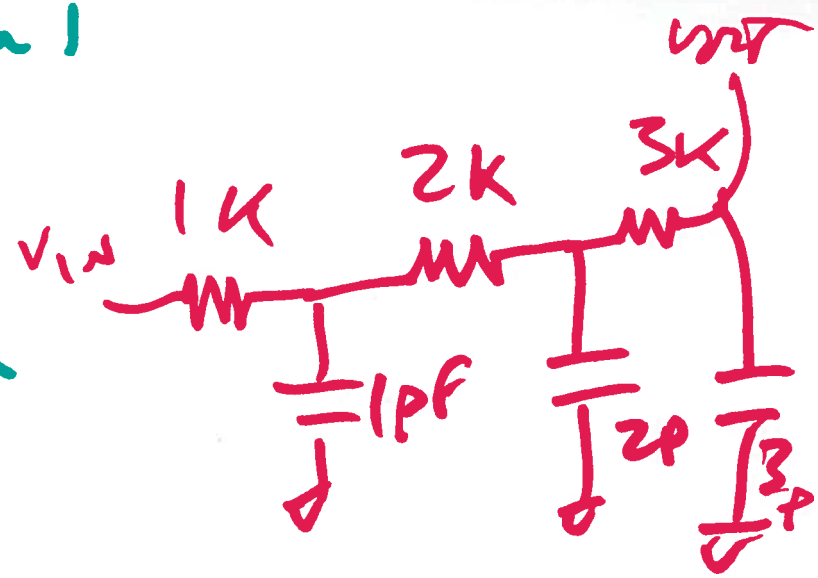
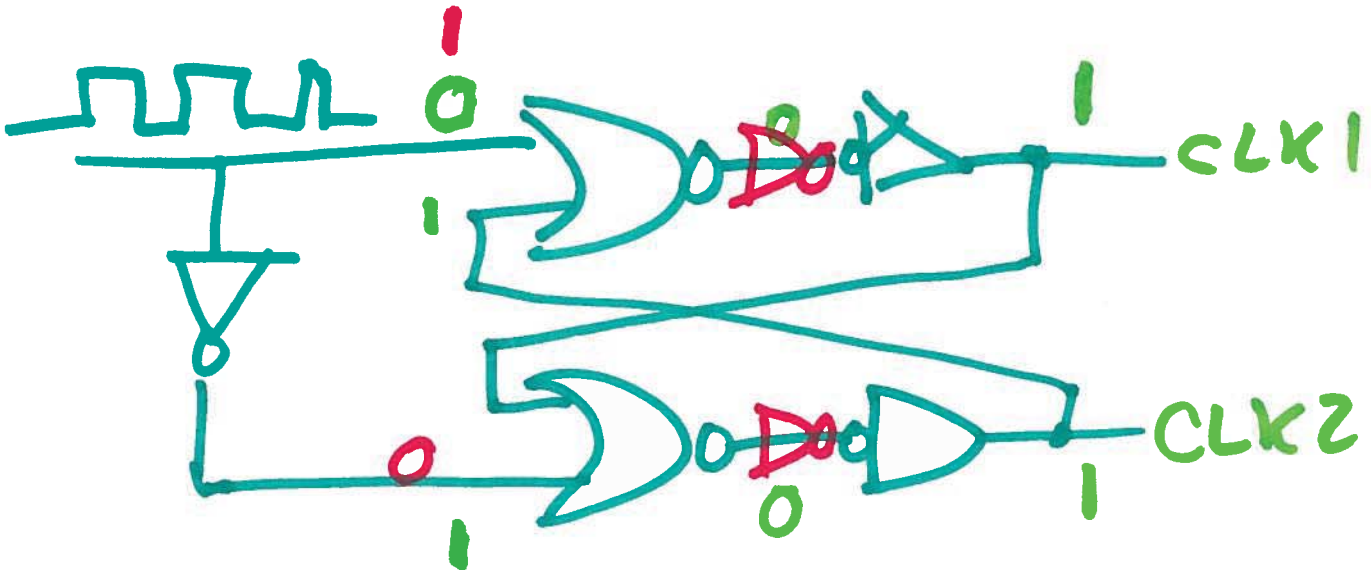
EE 421 / ECG 621
Digital IC Design
12/7/2016
Lecture 26



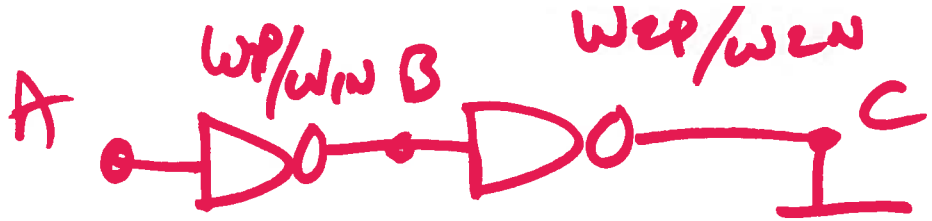
Study for final

quizzes
Homeworks
midterm exam
project





$$t_d = 0.7\left(1K \cdot 1p + (1K+2k)2p + (1K+2K+3k)3p\right)$$

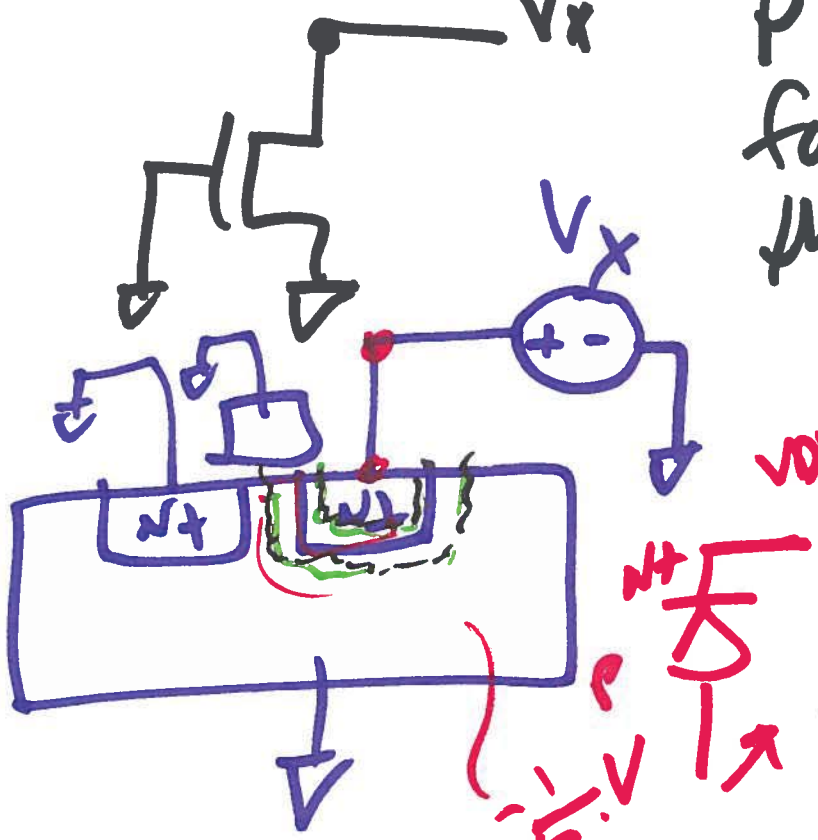


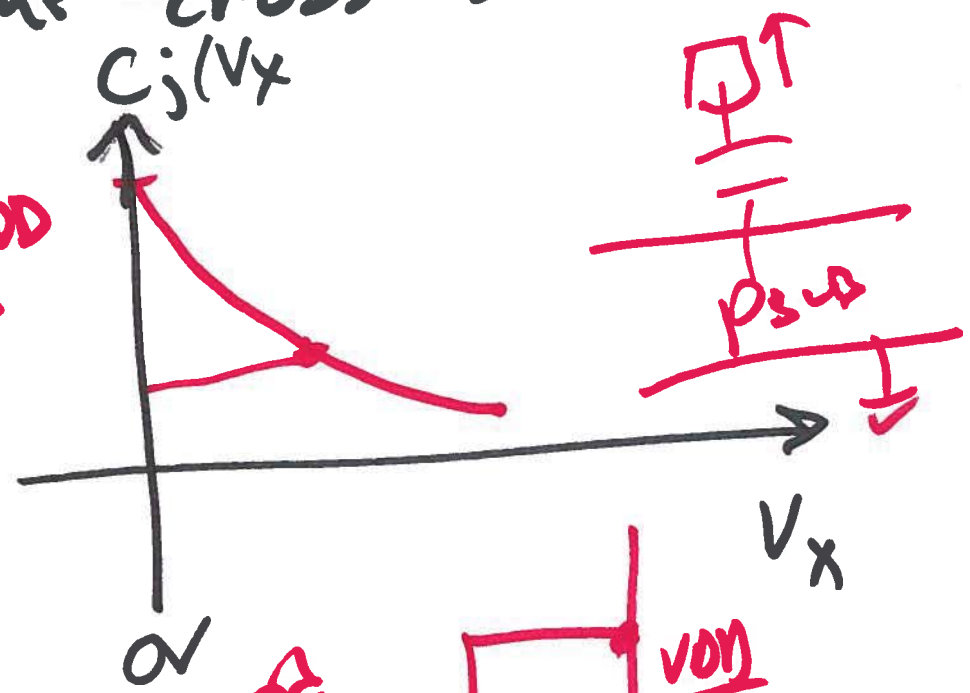
$t_{BC} = 0.7 \cdot \left(R_N' \cdot \frac{L}{W_{2N}} + R_P' \cdot \frac{L}{W_{2P}}\right) \cdot \left[C_L + C_{ox}' \cdot L\left(W_{N2} + W_{P2}\right)\right]$

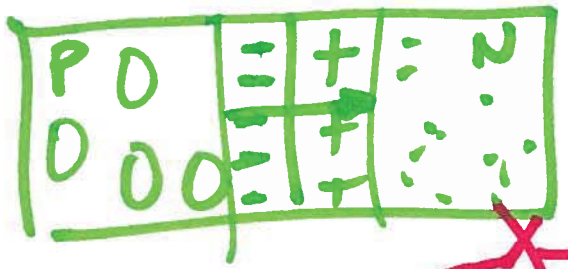
C_L

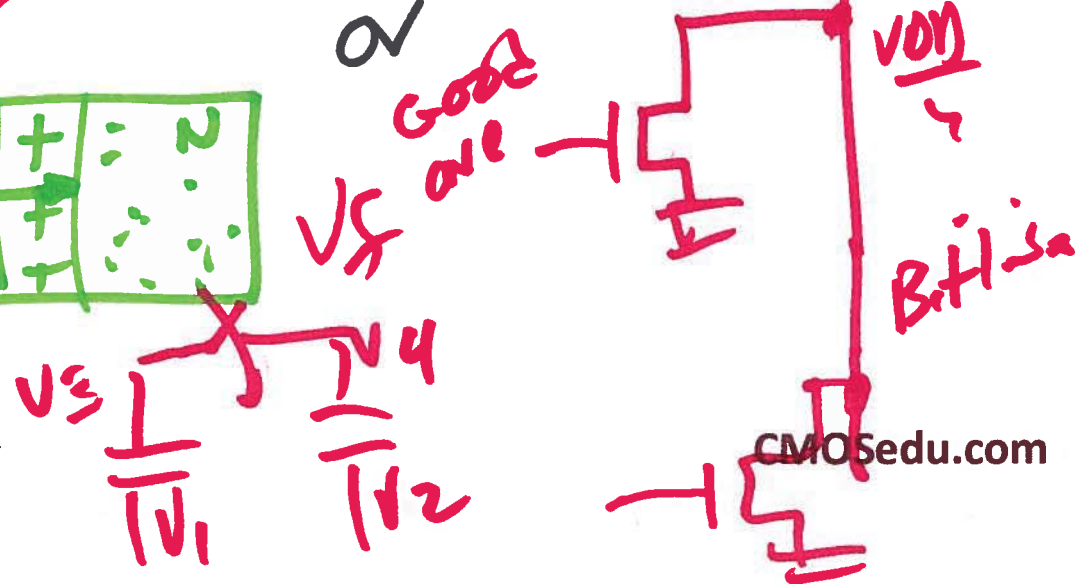
$t_{AB} = t_{PHL} + t_{PLH} = 0.7 \cdot \left(R_N' \cdot \frac{L}{W_{1N}} + R_P' \cdot \frac{L}{W_{1P}}\right) \cdot \left[C_{ox}' \cdot \left(W_{1N} L + W_{1P} \cdot L\right) + \frac{3}{2} C_{ox}' \cdot L\left(W_{2P} + W_{2N}\right)\right]$

Plot C vs. Vx for the following CKT. Sketch the cross-sectional view.



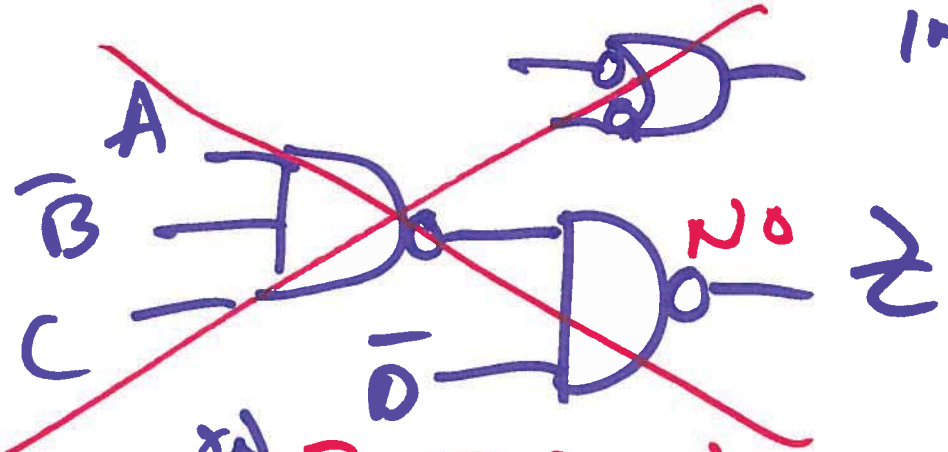


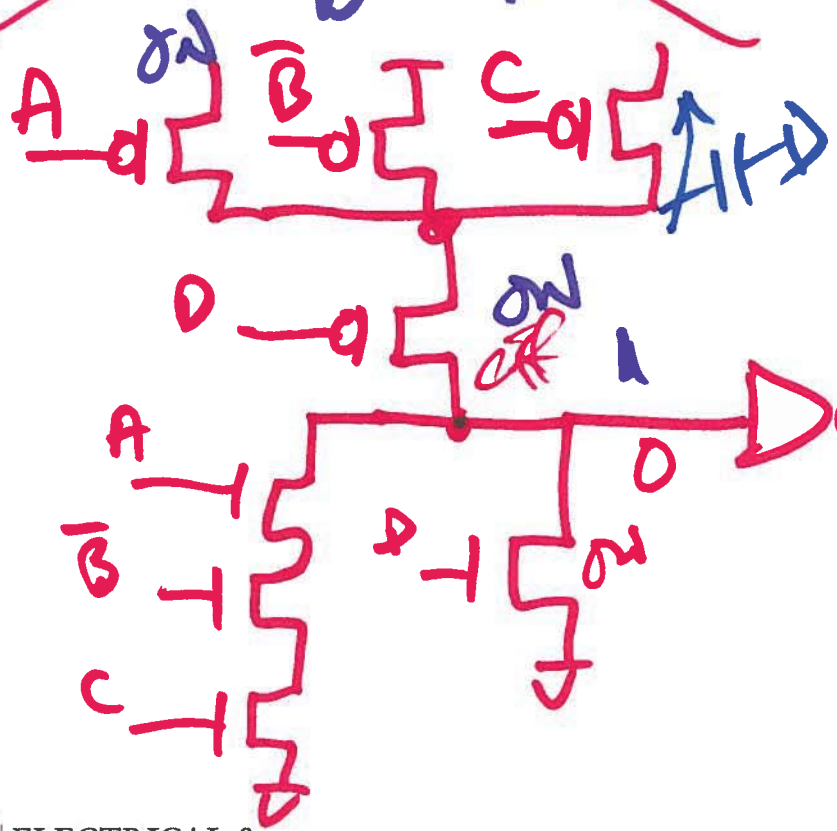




$Z = A\bar{B}C + \bar{D}$ ↑ $Z = 1$

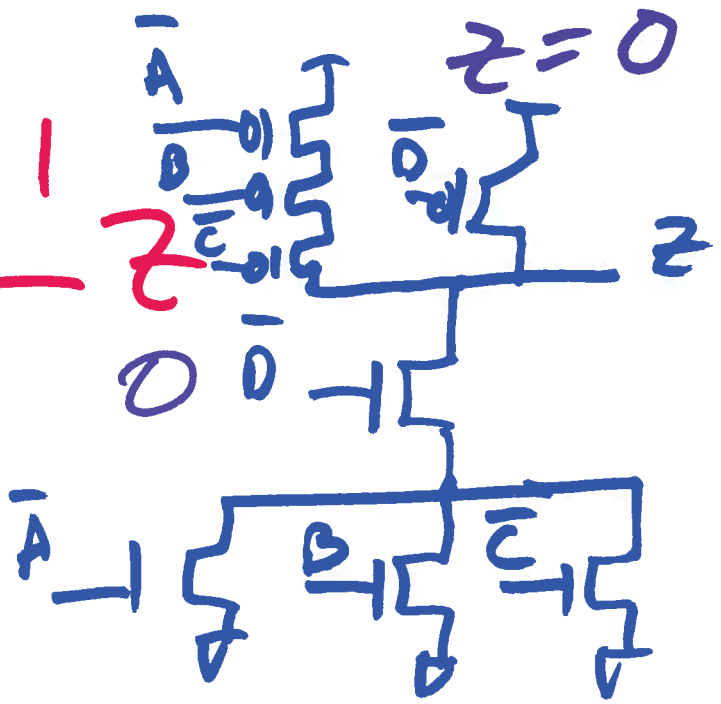
Implement a complex Cmos logic of this function

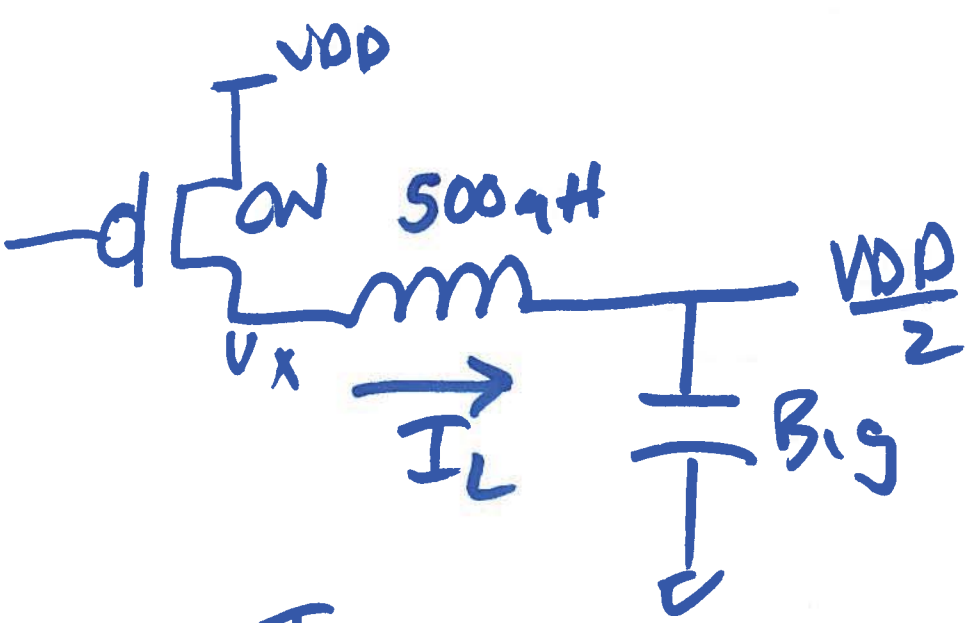




$D = 0$ $A = 0$

$Z = 0$





$$I = \frac{1}{L}\int_0^t V \cdot dt$$

$$\left(VDD - \frac{V_{DD}}{2}\right) = \frac{VDD}{2}$$

$$\frac{VDD/2}{L} \cdot t$$