

Name:

Id#

**COE 360, Principles of VLSI Design, Term 981**  
**Quiz# 2 – Sec 2**

Date: Monday, October 12

- (I) Explain why an nmos pass transistor produces a poor 1.
- (II) Implement the following in CMOS using the smallest number of transistors assuming the availability of inverted inputs:
- (i)  $Y = A \bar{C} \bar{B} + A \bar{B} \bar{C} + A B \bar{C} + B C A \bar{C}$

(ii)  $Y = ABC + ABD + EC + FD + ED + CF$

(III) Calculate the threshold voltage of an nmos transistor assuming  $V_{SB}=2$  volt,  $V_{T0}=0.7$  volt,  $=0.5 \text{ volt}^{1/2}$ ,  $=-0.3$  volt.