

**Homework Assignment 1**  
**(Due Jan. 30th at the beginning of the class)**

- (1) **[Static CMOS Gates, 10 points]** Draw a transistor-level schematic for the following function. Use 4 nFETs and 4 pFETs. Available inputs:  $A, B, C, D$ .

$$F = \overline{A + B \cdot (C + D)}$$

- (2) **[Static CMOS Gates, 10 points]** Draw a transistor-level schematic for the following function. Try to minimize the total # transistors. Available inputs:  $A, \bar{A}, B, \bar{B}, C, \bar{C}, D, \bar{D}$ .

$$F = \bar{A} + B \cdot \bar{C} + D$$

- (3) **[Static CMOS Gates, 10 points]** Draw a transistor-level schematic for the following function. Try to minimize the total # transistors. Available inputs:  $A, \bar{A}, B, \bar{B}$ .

$$F = A \oplus \bar{B} + \bar{A} \oplus B$$