

CSE 493/593 FALL 2023 HOMEWORK 1

- Given in Fig. 1 is the Voltage Transfer Characteristics of an inverter. Calculate the NM_L and NM_H .

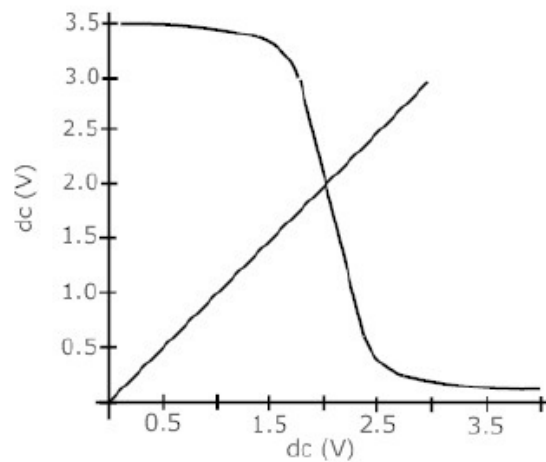


Fig. 1

- Implement the given logic function using Complementary CMOS Logic.
 $f = \overline{((AB)+C)D}$
- Consider the following stick diagram. Draw the electrically equivalent transistor-level schematic. What logic equation does the circuit implement?

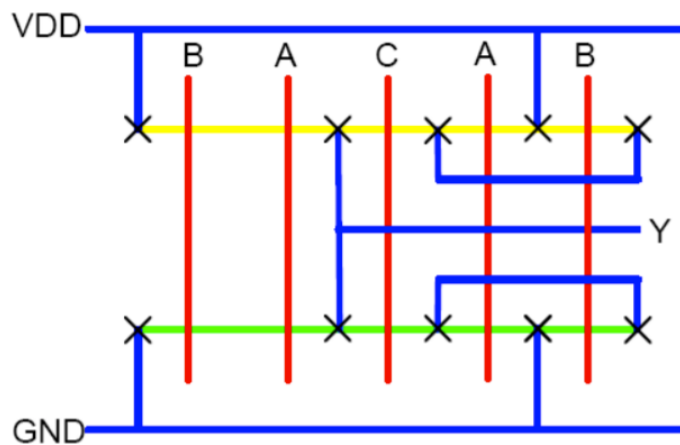


Fig. 2

- Design a Half Adder (Sum and Carry) using Complementary CMOS Logic. [Hint: Derive logic expressions first]
- Design a 4x1 multiplexer using Transmission Gate Logic. Considering inputs A, B, C, D; Select lines: S1, S2; Output: Out