Homework #5
Worth 120 points

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1. (10 pts) Draw the transistor level diagram for a 3-input AND gate. Be sure to specify Vcc and GND.

2. (20 pts) Draw the transistor level diagram for the Boolean Algebra below using the direct method discussed in class.

$$Q \;=\; A\bar{B}\bar{C} \;+\; \bar{A}\bar{B}C \;+\; \bar{A}B\bar{C} \;+\; AB\bar{C}$$

3. (15 pts) Reduce the following Boolean Algebra.

$$\overline{(\bar{A} + \bar{B} + \bar{C})} + AB(\bar{A} + \bar{B})D + B\bar{D}A(\bar{A} + \bar{B}) + B\bar{C}A$$

4. (15 pts) Reduce the following Boolean Algebra.

$$C\bar{A}D + \overline{(\bar{D} + \bar{A} + C)} + AD\bar{C}B + \overline{\left((\bar{A}\bar{D}C)(\bar{C}\bar{D}A)\right)} + B\bar{D}\bar{C}A$$

5. (20 pts) Convert the following IEEE 754 SP FP Numbers to decimal. Feel free to use a calculator on this problem only if the decimal portions of the number get very small.
    a. 0x40490FD0
    b. 0x44D41000
    c. 0x3B950000
    d. 0x429C0000

6. (20 pts) Convert the following decimal numbers to IEEE 754 SP FP and give the result in Hex.
    a. 1
    b. -254.125
    c. 3/64
    d. -33.1

7. (20 pts) Perform the Following math operations on Floating Point Numbers. Note that while you may check your answer you should perform the operation in binary.
    a. 0x47250000*0x42fe0000
    b. 0x44801000-0x44804000