Quiz 4 – EECS 270, Spring '07

Name: KEY unique name: KEY

Honor code:
I have not given or received aid on this quiz, nor have I observed anyone else doing so:

Sign here: _____

This quiz is graded out of 100 points and is worth about 4% of your class grade. You will have **25** minutes for this quiz. ***Closed everything including calculators!*** To receive partial credit, work must be shown.

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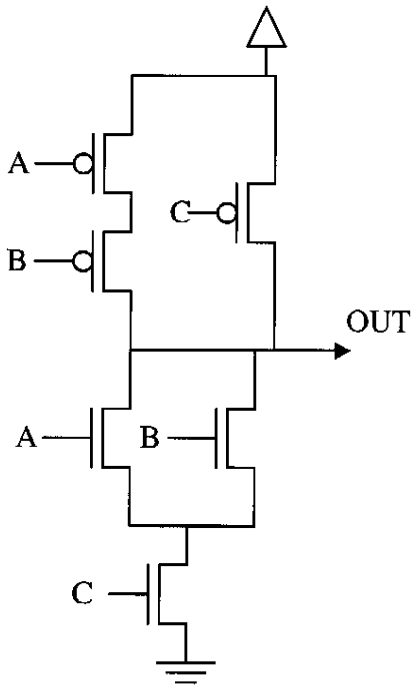
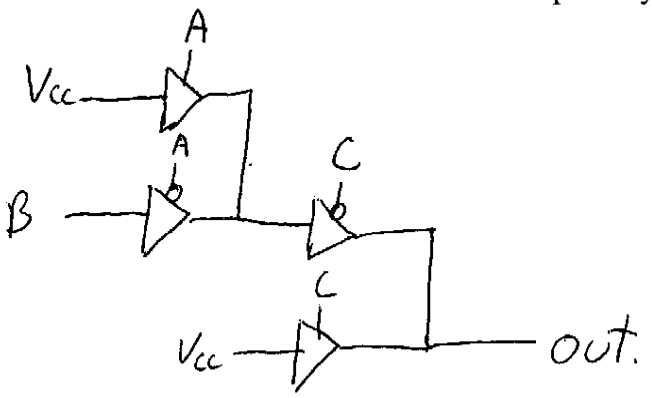
1. Transistor problem. **[30]**

A	B	C	OUT
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

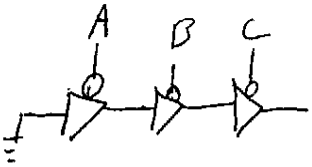
Fill in the above truth table with either "1", "0", "Hi-Z" or "Smoke" (the last if OUT is connected to both Vcc and Ground).



2. Using only tri-state drivers and inverters, design a 3-input OR gate. You can freely use "GND" and "Vcc" as needed. For full points your design should use 8 or less devices. **[35]**

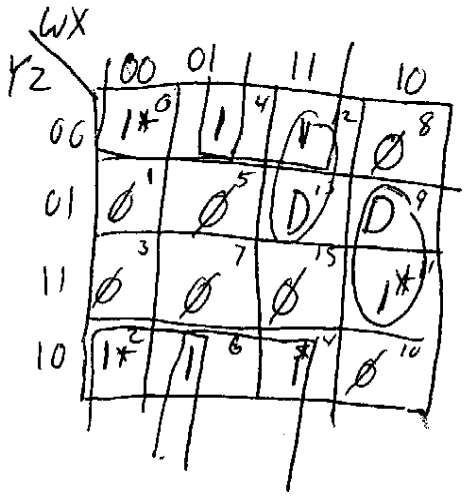


Note: A common error was to try to "push" Hi Z through a device



If $\bar{C} \cdot B$, the output is unknown!

3. Using a K-map, find the minimal sum-of-products of $\Sigma_{(W,X,Y,Z)}$ (0,2,4,6,11,12,14)+d(9,13). Place a star (*) next to each *distinguished 1* in your K-map. **[35]**



~~$\bar{W}\bar{X}$~~ ~~$\bar{X}\bar{Z}$~~

$\bar{W}\bar{Z} + X\bar{Z} + W\bar{X}Z$