CE HW 3

1) Reducing literals would reduce the power consumption of the circuit

3) a) $\overline{\bar{b}(\bar{c}+a)+\bar{a}bc}$

$\overline{X+Y} = \bar{X}\bar{Y}$

$\overline{XY} = \bar{X}+\bar{Y}$

$\overline{\bar{b}(\bar{c}+a)} \cdot \overline{\bar{a}bc}$

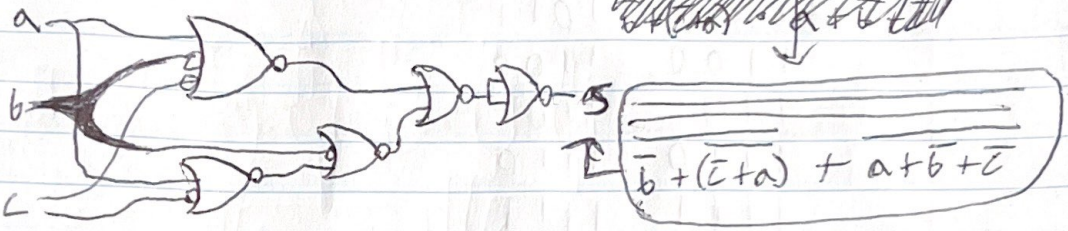
$\overline{b(\bar{c}+a)} + \overline{\bar{a}bc}$

$b(\bar{c}+a) + \bar{a}bc$

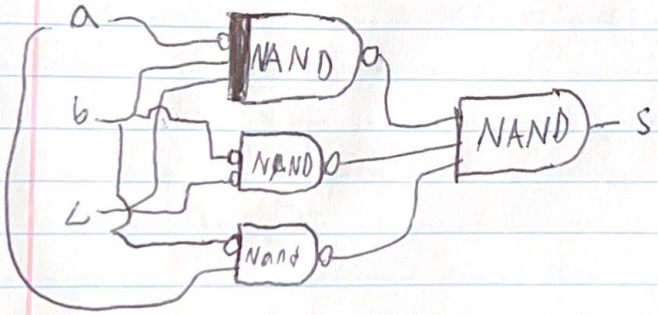
$\overline{b+(\bar{c}+a)} + \overline{\bar{a}+b+\bar{c}}$

$\bar{a} \cdot \bar{b} \cdot \bar{c}$

$\overline{\bar{b}+(\bar{c}+a)} + \overline{a+\bar{b}+\bar{c}}$



3 b) $\overline{\bar{a}bc + \bar{b}\bar{c} + a\bar{b}} = \overline{\bar{a}bc} \cdot \overline{\bar{b}\bar{c}} \cdot \overline{a\bar{b}}$



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4) $\bar{a}b\bar{c} + a\bar{b}\bar{c} + ab\bar{c}$

$(\bar{a}+a)(b\bar{c}) + a\bar{b}\bar{c}$

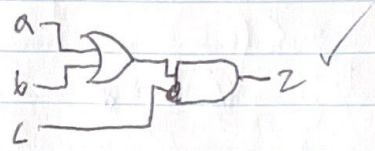
$1 \cdot b\bar{c} + a\bar{b}\bar{c}$

$\bar{c}(b + a\bar{b})$

$\bar{c}(b+a)(b+\bar{b})$

$\bar{c}(b+a)$

A	B	C	Z
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0



5) one, two, four, five, six, nine, ten,

$Y_3 = a \quad Y_2 = b \quad Y_1 = c \quad Y_0 = d$

0001
0010
0100
0101
0110
1001
1010

$\bar{a}\bar{b}\bar{c}d + \bar{a}\bar{b}c\bar{d} + \bar{a}bc\bar{d} + \bar{a}b\bar{c}d + \bar{a}bcd + a\bar{b}\bar{c}d + a\bar{b}c\bar{d}$

6)