

I hereby pledge that I will strictly adhere to academic integrity codes and the work done on this examination is solely my own and I will not receive or give any help from/to anybody or any source during this examination.

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CSE232-Midterm
Group 6 Kaya

1)

a	b	c	F
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

a) Minimize with boolean algebra

b) Minimize with k-map, draw circuit.

c) draw circuit with only NAND gates

a)

$$\bar{a}\bar{b}\bar{c} + \bar{a}b\bar{c} + \bar{a}bc + a\bar{b}\bar{c} + abc = F(a,b,c)$$

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

$$= \bar{c}(\bar{a}(\bar{b}+b) + ab) + c(\bar{b}(\bar{a}+a)) = \bar{c}(\bar{a} + ab) + c(b) = \bar{c}(a+b) + cb$$

$$\begin{aligned} \bar{c}(a+b) + cb &= \bar{c}a + \bar{c}b + cb \\ &= \bar{c}a + \bar{c}b + cb + \bar{c}cb \\ &= \bar{c}a + \bar{c}b + cb \end{aligned}$$

b)

a \ bc	00	01	11	10
0	1		1	1
1			1	1

$a'c'$

$$F = a'c' + b$$

