

Dornell

04/1/22 Midterm Bonus activity

1)

- a) f
- b) f

$$(0011 = -3 < 0010 = -2)$$

- c) f

- d) f

- e) f

- f) f

- \* g) f

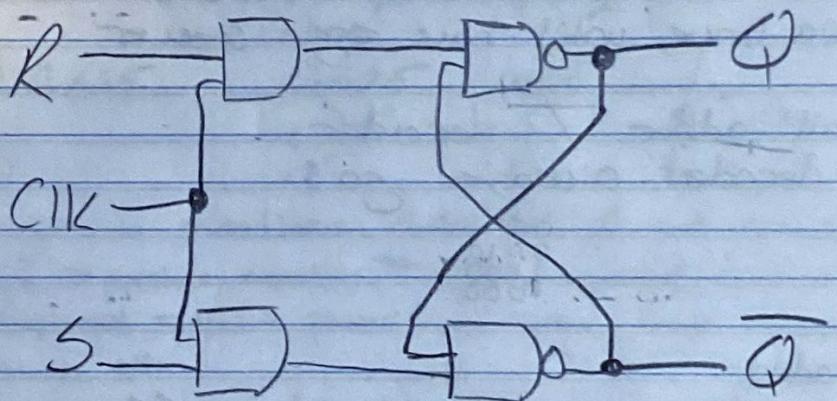
- h) f

- i) f

- j) f

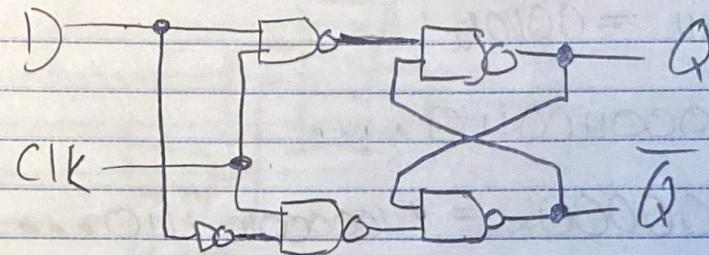
$$\begin{array}{r} 0011 \\ + 1011 \\ \hline 1110 \end{array}$$

2)

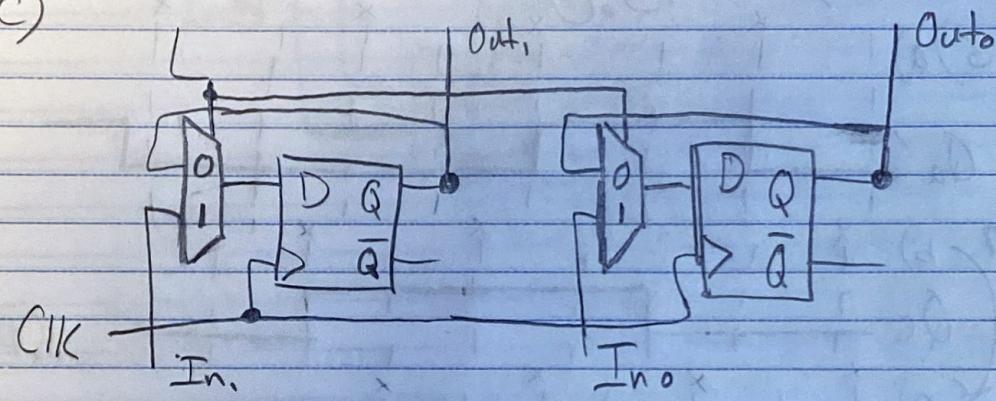


C	S	R	Q(+1)	Q(+)
0	0	0	Q(+)	↓
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1	0	
1	1	0	1	
1	1	1		undesirable

- b) • dealing w/ two inputs is messy  
 • can trace an untraceable state



c)



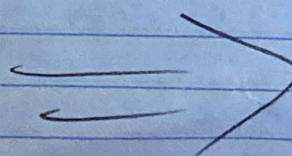
3)

$$\text{a)} \quad 00010 = \begin{array}{r} 11100 \\ + 00101 \\ \hline 00011 \end{array} = \text{no overflow}$$

$$\text{b)} \quad -11 = 01011 = \begin{array}{r} 10101 \\ + 01100 \\ \hline 00001 \end{array} = \text{no overflow}$$

$$\text{c)} \quad -15 = 01111 = \begin{array}{r} 10100 \\ + 00001 \\ \hline 00001 \end{array}$$

$$-9 = 01001 = \begin{array}{r} 10111 \\ + 01000 \\ \hline 01000 \end{array} = \text{overflow}$$



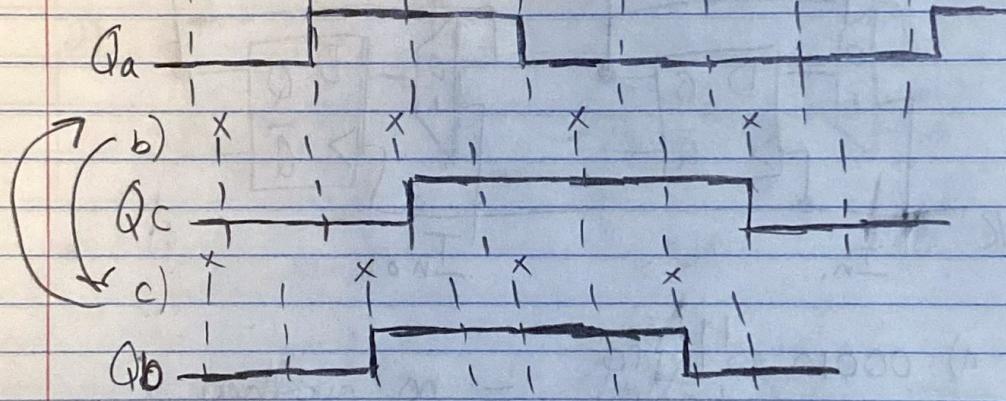
4) a)  $\begin{array}{r} 1011 \\ -1011 \\ \hline 00100 \end{array}$   $= 27$   
 ii)  $\begin{array}{r} 1011 \\ +1011 \\ \hline 00100 \end{array}$   $= -11$   
 iii)  $00100_2$   
 iv)  $11011 = 00101_2$

b)  $11000001100110\dots$

c)  $C1700000_8 = 110000101110\dots$

$$\Rightarrow -15.0$$

5) a)



6) a)

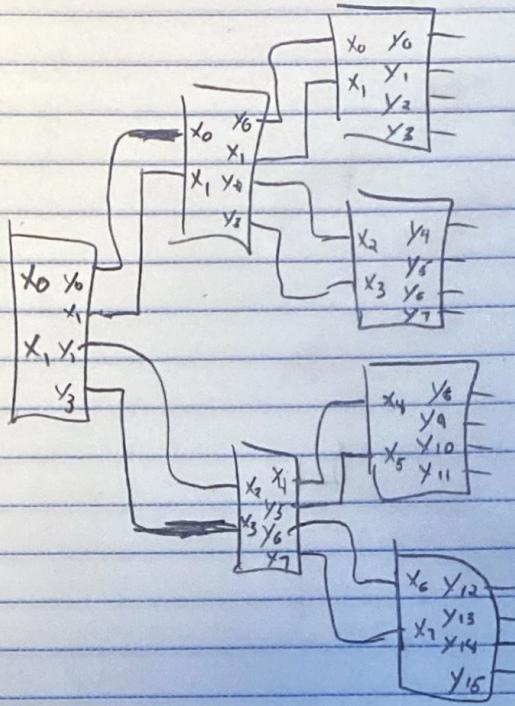
	AB	CD	Q
00	00	00	0
00	01	01	1
01	00	10	d
01	01	11	d
10	d	00	1
10	d	11	d

$$= \overline{CD} + \overline{AB}\overline{D} + A\overline{B} + A\overline{C}\overline{D}$$

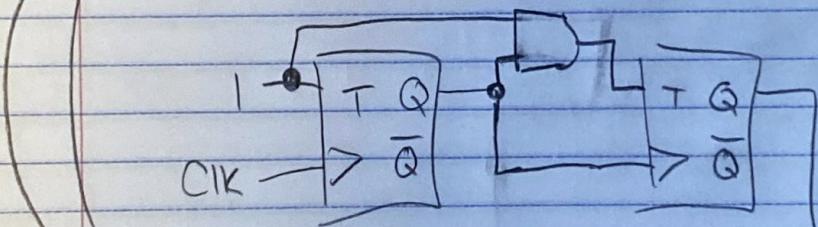
$\Rightarrow$  NOT SURE

b) NOT SURE

7)



7(a)



$$8) f = \bar{A}(\bar{B}) + \bar{A}(\bar{B}\bar{C} + \bar{B}CD + C + \bar{B}D + \bar{B}\bar{C})$$

$$f = AB(\bar{C} + D + C) + AB(CD + C)$$

$$f = AB(1) + AB(CD + C)$$

$$f = f = AB\bar{C}(0) + AB(C(D))$$

RAN OUT OF TIME,  
THOUGHT CLOSED AT 4:25