Homework 4

Graded

Student

Adithya Chander

Total Points

5.6 / 6 pts

Question 1

P1 **1** / 1 pt

The rubric is hidden for this question.

Question 2

P2 **1** / 1 pt

The rubric is hidden for this question.

Question 3

P3 **0.8** / 1 pt

The rubric is hidden for this question.

Question 4

P4 **0.9** / 1 pt

The rubric is hidden for this question.

Question 5

P5 **0.9** / 1 pt

The rubric is hidden for this question.

Question 6

P6 **1** / 1 pt

The rubric is hidden for this question.

Questions assigned to the following page: 6, 2, 3, 1, 4, and 5

HW4-CSI20A

1. Simplest SOP and POS expressions for kmap with don't cares

$F=\sum_{A,B,C}(0,1,3,4,6)+D(2,5)$

AB \ C	$\bar{A}\bar{B}$	$\bar{A}B$	AB	$A\bar{B}$
C'	1	X	1	1
C	1	1	0	X

$\bar{A}+AB=\bar{A}+B$

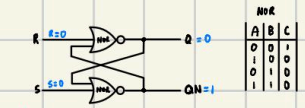
SOP: $A'+AC'=A'+C'$

AB \ C	$\bar{A}\bar{B}$	$\bar{A}B$	AB	$A\bar{B}$
C'	1	X	1	1
C	1	1	0	X

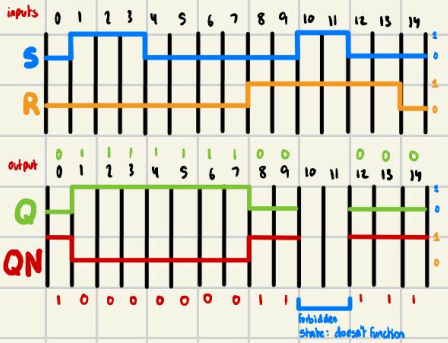
POS: complement 0 values

$A'+C'$

2. Sketch the output waveforms for Q and QN of the SR Latch



NOR		
A	B	C
0	0	1
1	0	0
0	1	0
1	1	0

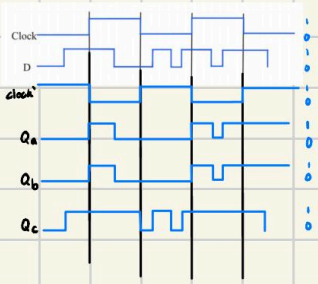


S	R	output
0	0	no change
1	0	set Q→1
0	1	reset Q→0
1	1	not allowed

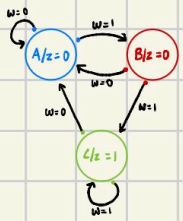
3. draw waveforms for Q_a, Q_b, Q_c given the timing diagrams of Clock and D waveforms

D-latch

D	Q
Clk'	Q'



4. Find the state table for the state diagram. is it a mealy or moore?



mealy machine - output depends on state + current input

moore machine - output depends on current state

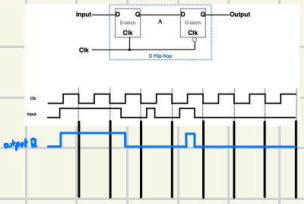
this is a mealy machine since the output z depends on the current state (i.e. whether you are at A, B, or C) as well as the input that brought it there.

	next state, output	
current	input w=0	input w=1
A	A, z=0	B, z=0
B	A, z=0	C, z=1
C	A, z=0	C, z=1

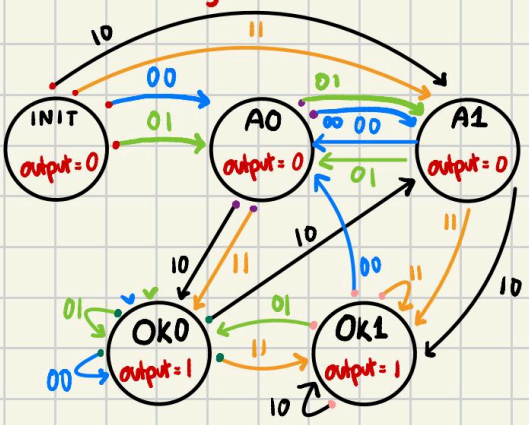
since the input and the state both have an effect on the output, this is a mealy machine

6 total states

5. Sketch the waveform



6. draw a state diagram for the moore machine



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Section 001/025

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