

Computer Architecture and Organization

WINTER 2024

Exam 2 , April 11, 2024

- Please make sure your handwriting is clear and legible. This will help us in grading, so you don't lose any points for illegible writing.
- No use of cell phones or any electronic devices
- No sharing of devices between students
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- The following pledge is required:
"I have neither given nor received unauthorized aid in completing this work."

Name: _____

Select 5 of the following questions: (only 5)

Question_1

Construct a state diagram from the following state table:

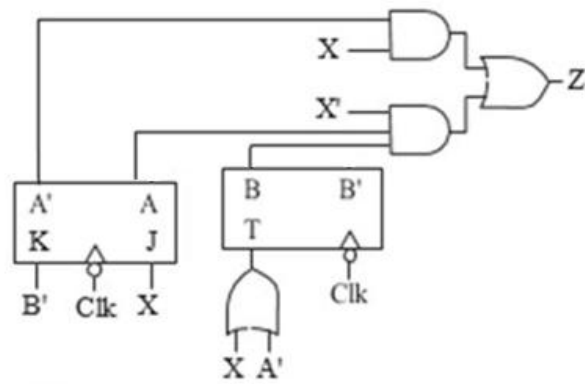
Present state	Input x	
	0	1
A	D/1	B/0
B	D/1	C/0
C	D/1	A/0
D	B/1	C/0

Next state/Output z

Deduce Z

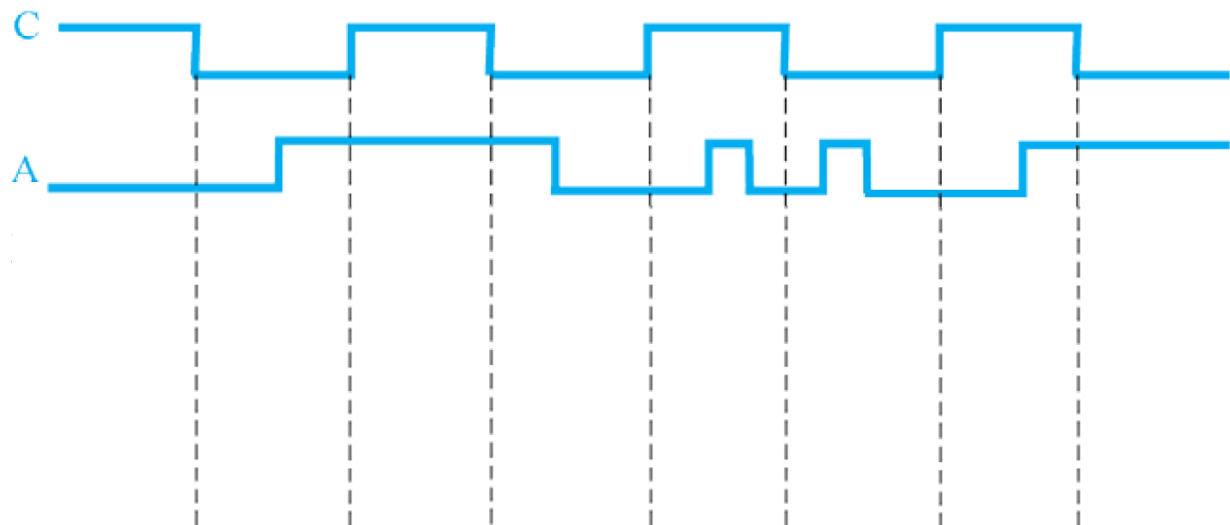
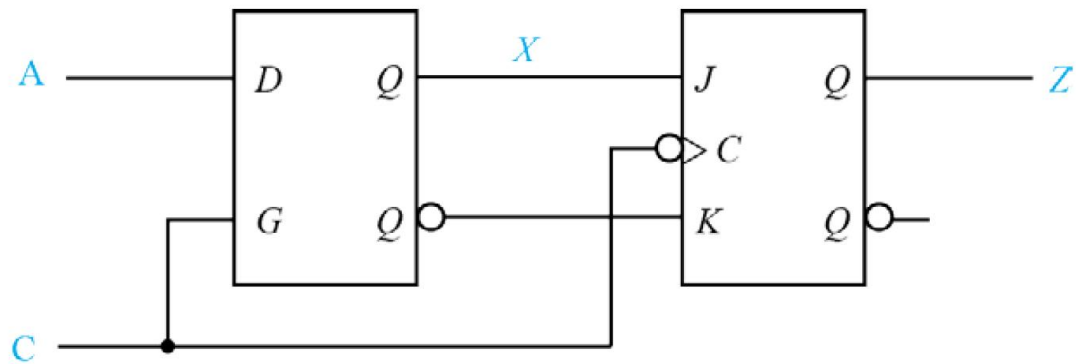
Question_2

For the given circuit, construct a transition table and a state graph:



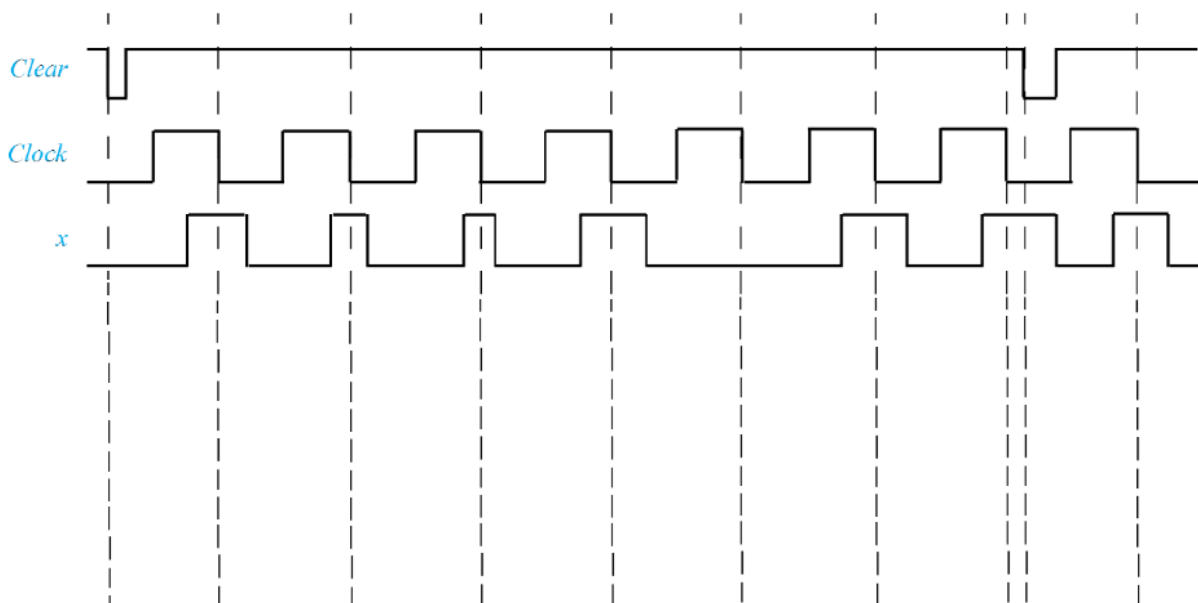
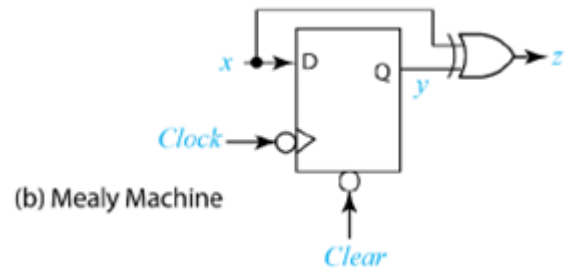
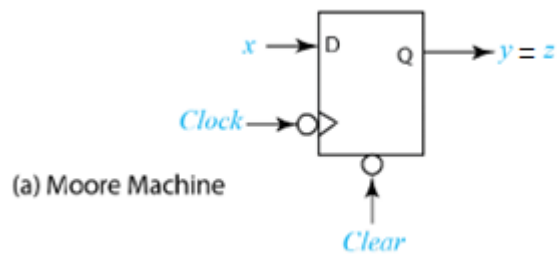
Question_3

Complete the timing diagram given below for the circuit below by sketching the waveforms for X and Z. Assume initial values $X = Z = 0$.



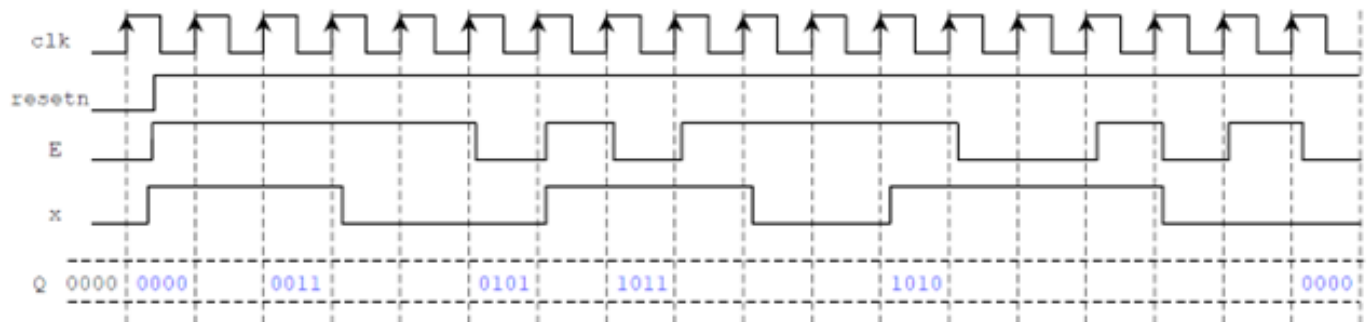
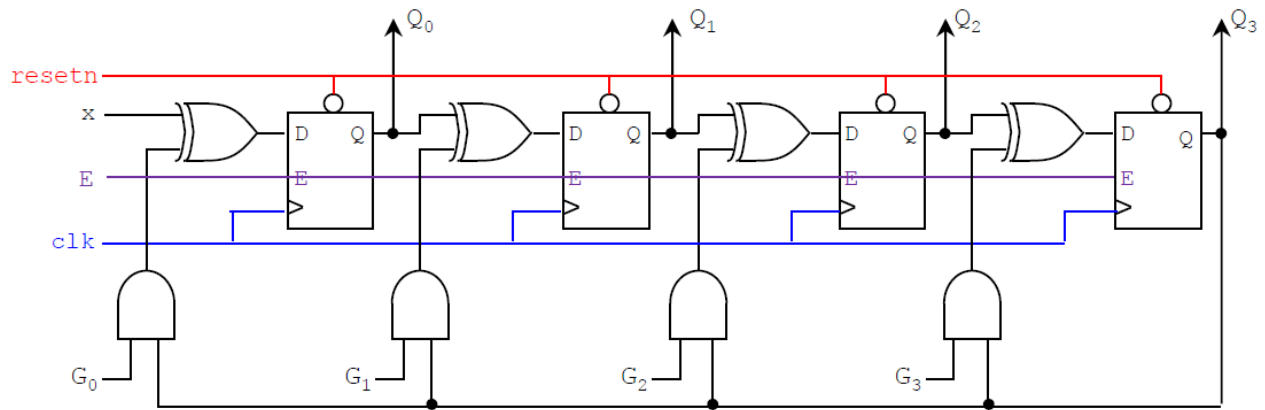
Question_4:

Derive state diagrams for the Moore and Mealy circuits shown below (a) and (b), and then complete the timing diagram for those circuits.



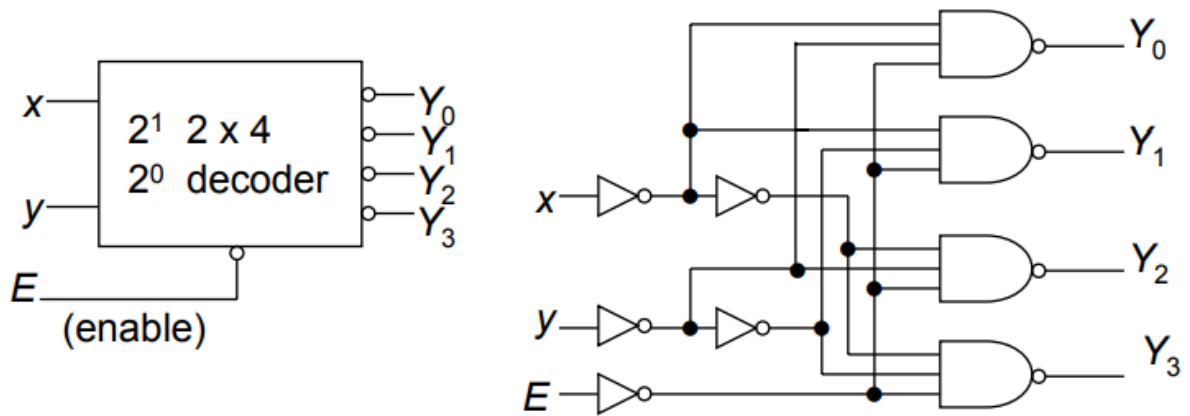
Question_5

Complete the timing diagram of the following circuit. $G = G_3G_1G_2G_0 = 1001$, $Q = Q_3Q_2Q_1Q_0$



Question_6

Fill in the truth table for the circuit below:



E	x	y	Y_0	Y_1	Y_2	Y_3
1	X	X	1	1	1	1
0	0	0				1
0	0	0	1		1	
0	0	1		1		
0	0	1	1			0