

Computer Architecture and Organization

WINTER 2023

Final Exam Part 1

- 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
- Two (2) double sided pages of handwritten notes is allowed
-
- The following pledge is required:
"I have neither given nor received unauthorized aid in completing this work."

Name: _____

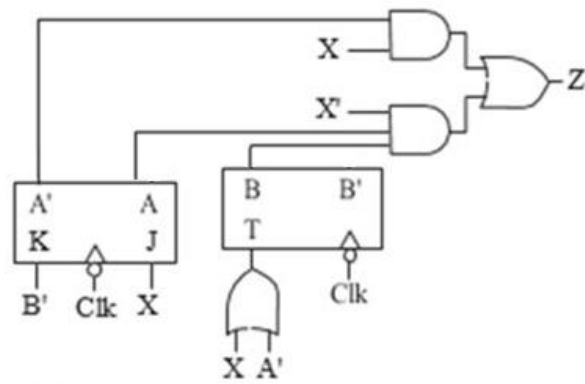
Question_1: Construct a state diagram from the following state table, and deduce Z.

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

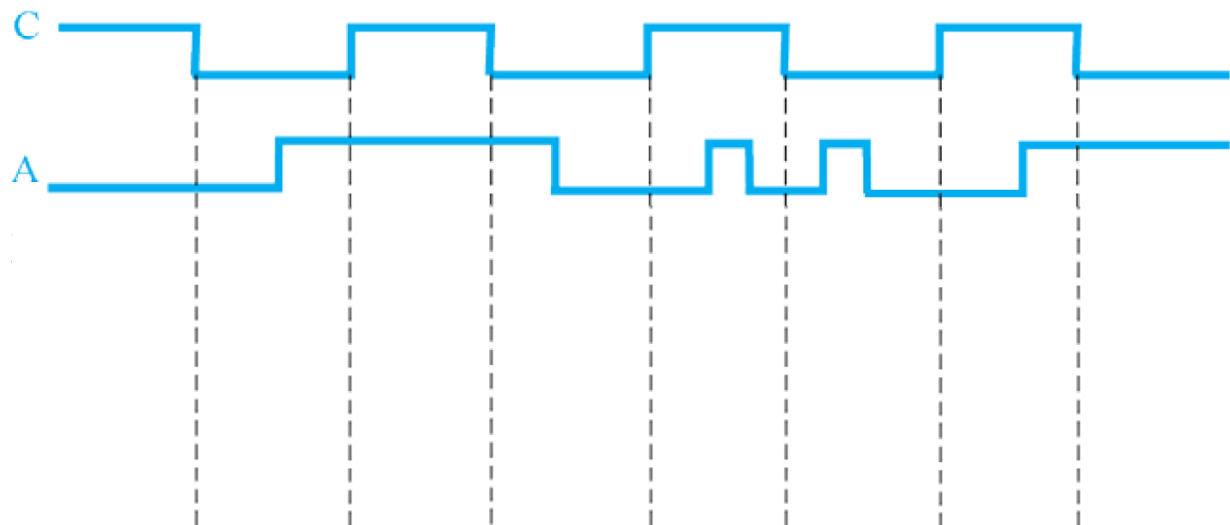
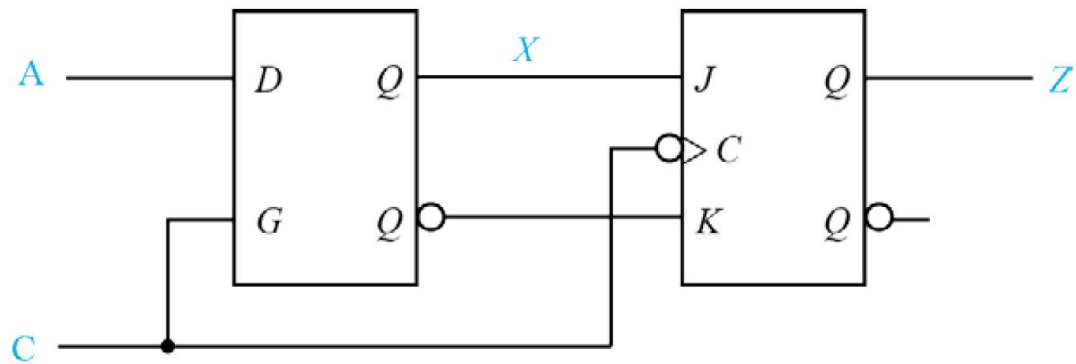
Question_2

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

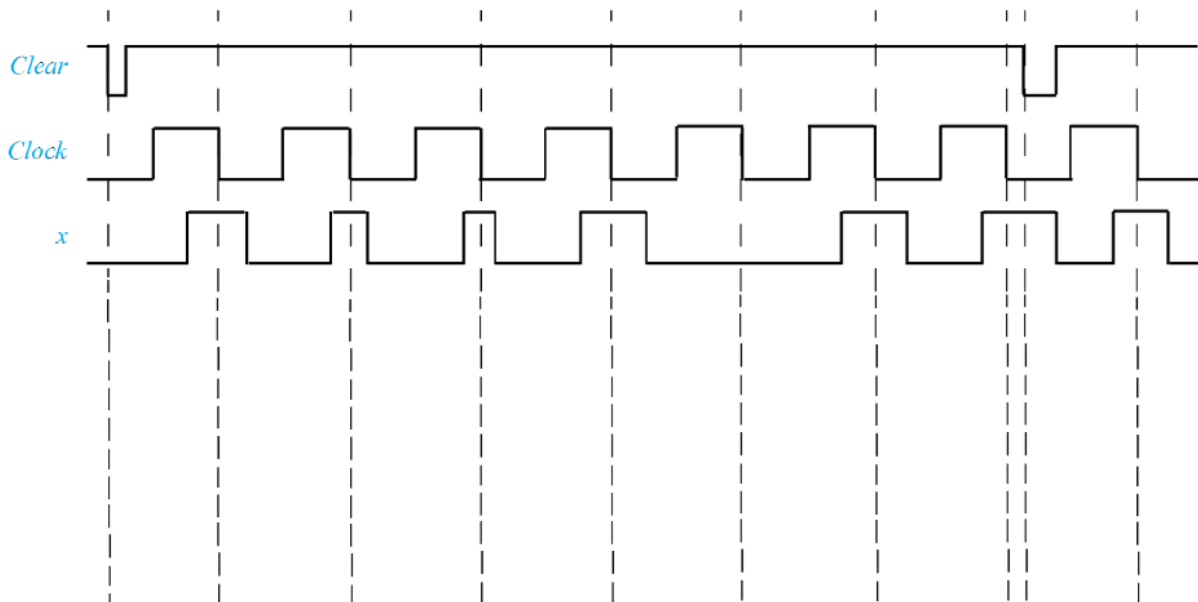
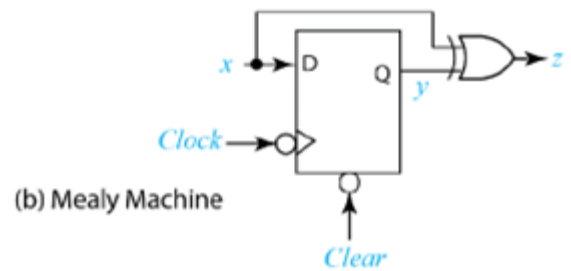
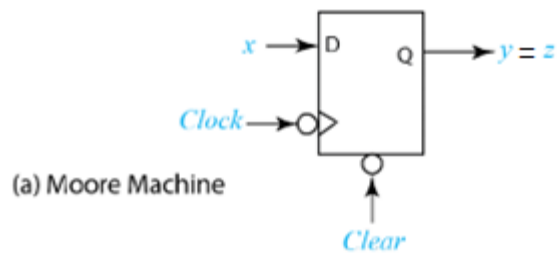


Question_3

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

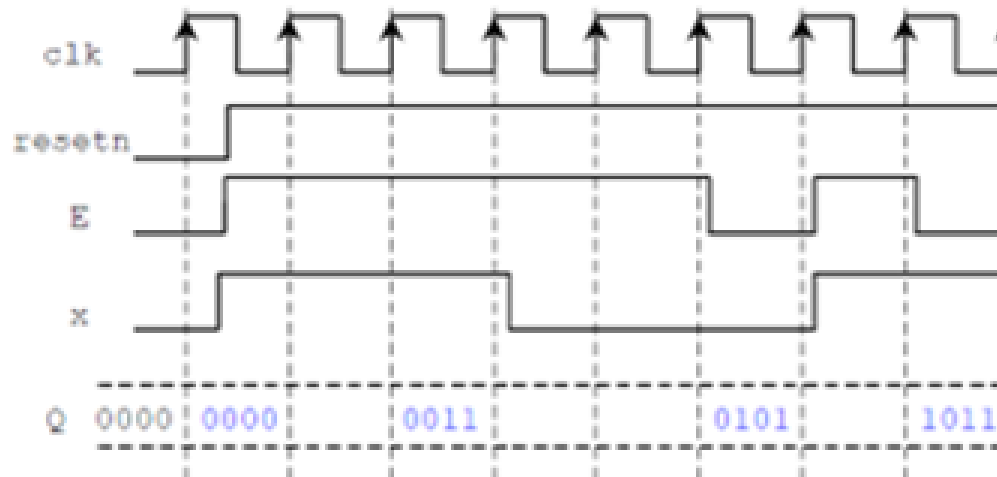
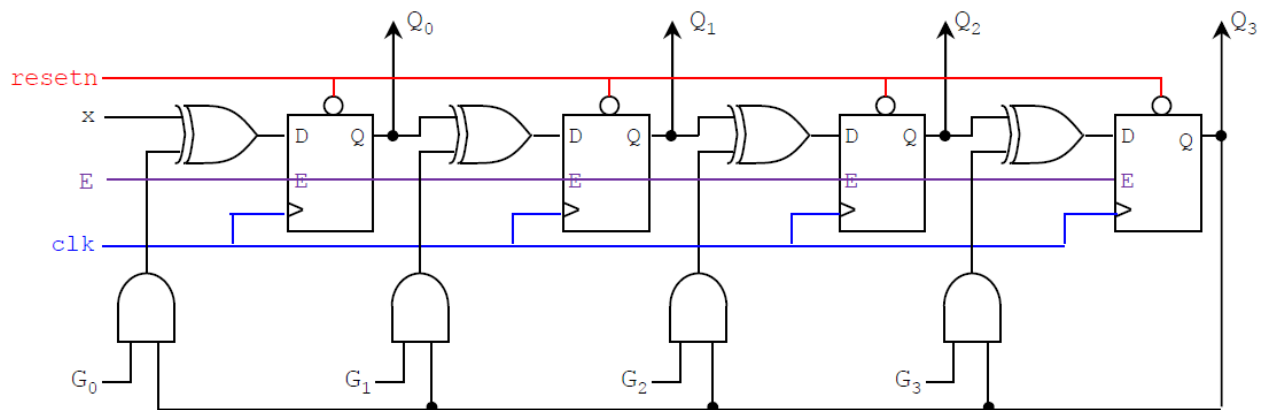


Question_4: Derive state diagrams for the Moore and Mealy circuits shown below (a) and (b), and then complete the timing diagram for those circuits.



Question_5: Complete the timing diagram of the following circuit. $G = G_3G_1G_2G_0 = 1001$, $Q = Q_3Q_2Q_1Q_0$

Some values are already given for sanity check



Find f in each of the following circuits:

