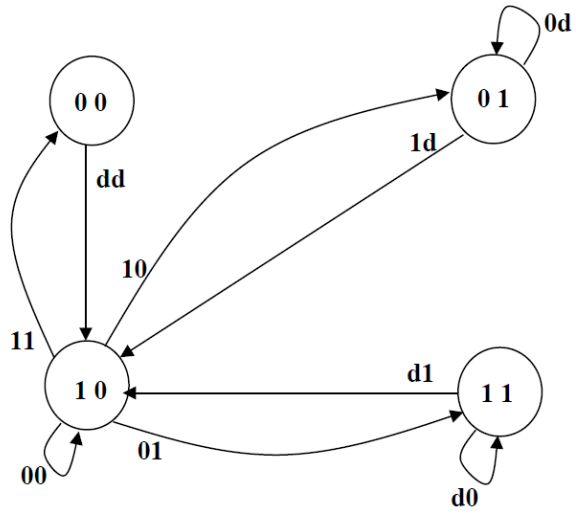
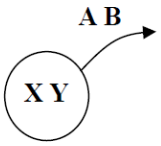
ISTM 214 Homework 9 (Due day: 12/20)

Name:_____ ID:_____

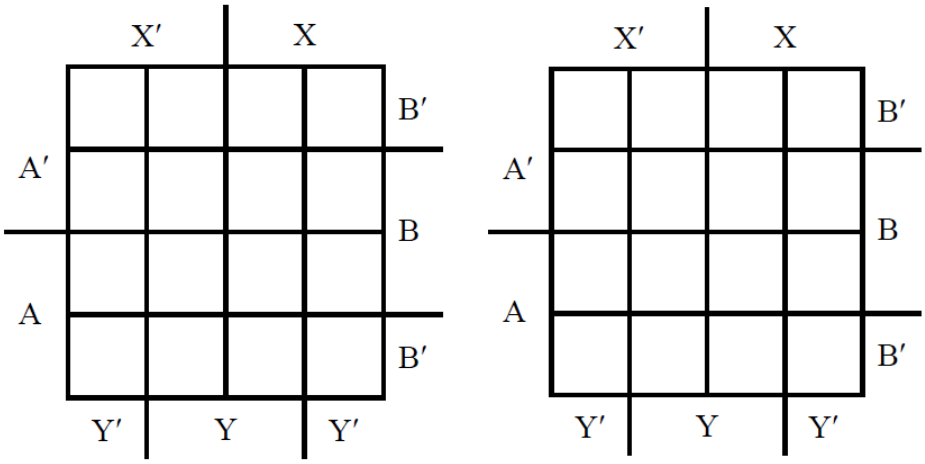
1. Given the following state transition diagram, determine the next state equations it represents in minimum sum-of-products form.





X	Y	A	B	X*	Y*
0	0	0	0		
0	0	0	1		
0	0	1	0		
0	0	1	1		
0	1	0	0		
0	1	0	1		
0	1	1	0		
0	1	1	1		
1	0	0	0		
1	0	0	1		
1	0	1	0		
1	0	1	1		
1	1	0	0		
1	1	0	1		
1	1	1	0		
1	1	1	1		

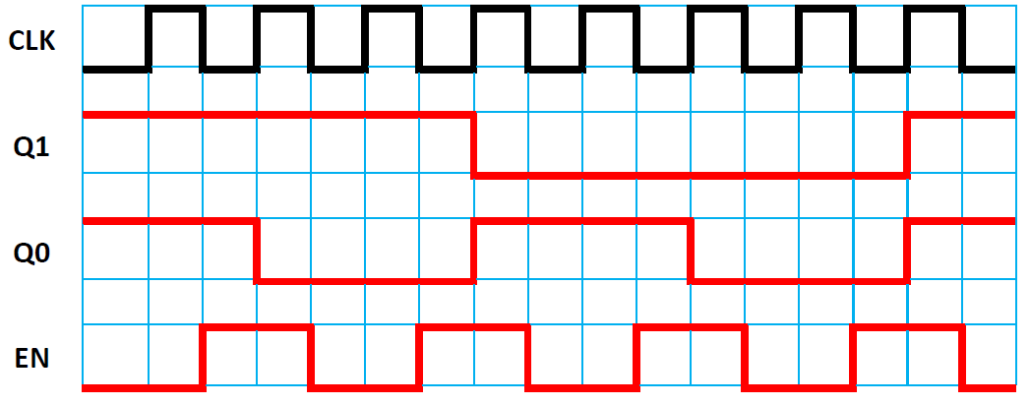
X* and Y* are "shorthand" for the next state of X and Y

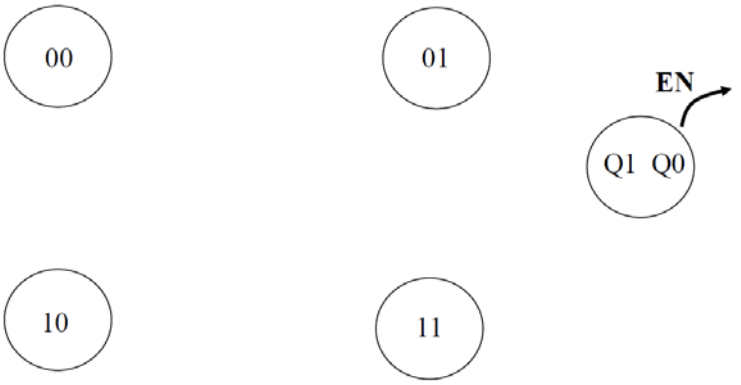


X* = _____

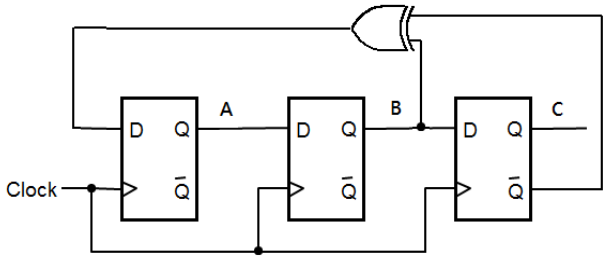
Y* = _____

2. A Given the timing diagram, below, for a state machine that has one input (EN) and two state variables (Q1 and Q0), derive a state transition diagram:

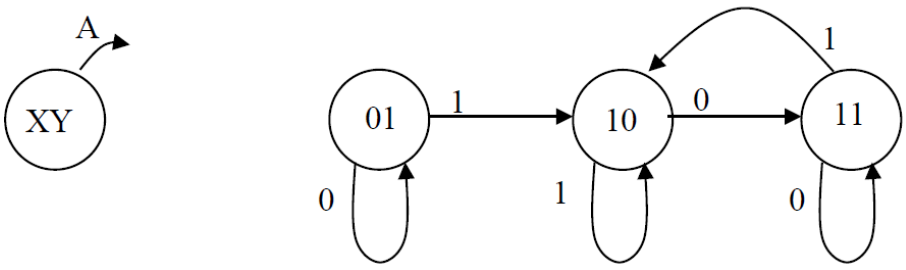




3. What is the counting sequence of the following circuit?



4. Given the following state transition diagram, determine:



(a) The next state equation for X if the state machine is designed for minimum cost

(b) The next state equation for Y if the state machine is designed for minimum cost