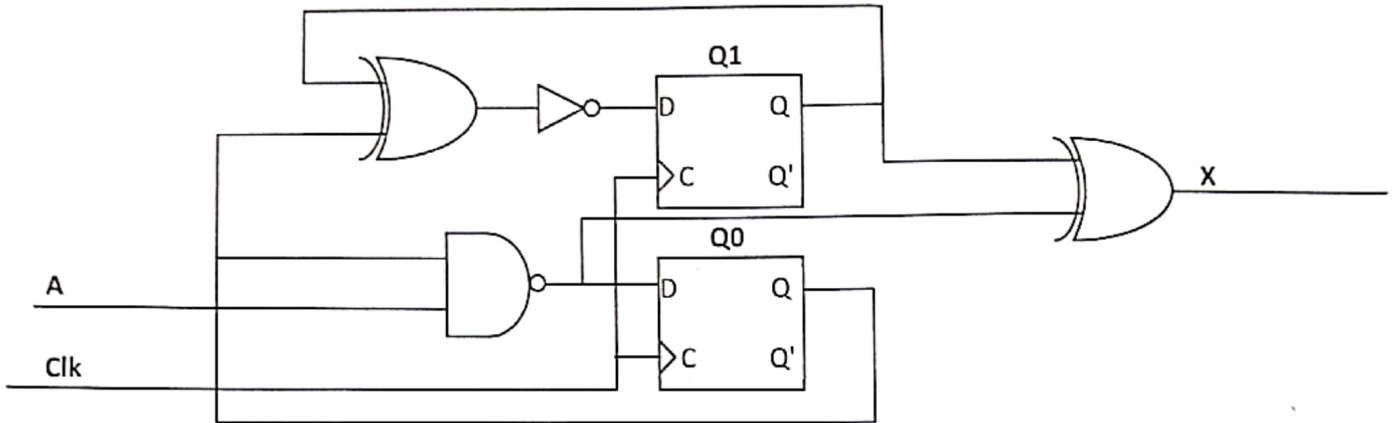Name: _Key_   unique name: _Key_

Honor code:
I have not given or received aid on this quiz, nor have I observed anyone else doing so:

Sign here: _Key_

This quiz is graded out of 100 points and is worth about 4% of your class grade.
***Closed everything including calculators!*** To receive partial credit, work must be shown.

1) Draw the state transition diagram for the above circuit. You should assume "00" is the initial state. Please label each state as "Q1Q0" (so if Q1=1 and Q0=0 the label would be "10"). Don't include unreachable states (if any). **[50]**

$$D_1 = \overline{Q_0 \oplus Q_1}$$

$$D_0 = \overline{A \cdot Q_0}$$

$$X = \overline{(A \cdot Q_0)} \oplus Q_1$$

Q_1	Q_0	A	D_1	D_0	X
0	0	0	1	1	1
0	0	1	1	1	1
0	1	0	0	1	1
0	1	1	0	0	0
1	0	0	0	1	0
1	0	1	0	1	0
1	1	0	1	1	0
1	1	1	1	0	1
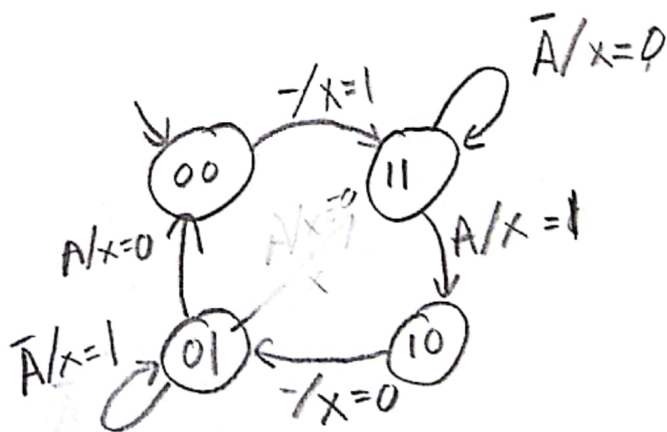
2) Find the minimal sum-of-products of F using the Quine-McClusky algorithm. For this problem we'll be grading your answer primarily based on your work so be sure to be careful, clear and neat. Use the format provided. **[50]**

$$F = \Sigma_{A,B,C,D}(0,5,8,10,11,14,15)$$

	Column I	✓	
0	0000	✓	
8	1000	✓	
5	0101		
10	1010	✓	
11	1011	✓	
14	1110	✓	
15	1111	✓	

	Column II	✓	
0,8	X000		
8,10	10X0		
10,11	101X	✓	
11,15	1X11	✓	
14,15	111X	✓	
10,14	1X10	✓	

	Column III	✓	
10,11,14,15	1X1X		
	1X1X		

1010
1110

List of Prime Implicants (Provide in the form AB, AC', D)

$\bar{A}B\bar{C}D,\ \bar{B}C\bar{D},\ A\bar{B}\bar{D},\ AC$

List of distinguished ones (provide the binary value of each distinguished one):

0000, 0101, 1011, 1110, 1111

Minimal sum-of-products: $\bar{A}B\bar{C}D + \bar{B}\bar{C}\bar{D} + AC$

	5	0,8	8,10	10,11,14,15
0 *		X		
5 *	X			
8		X	∅	
10			X / X	X
11				X
14				X
15				X