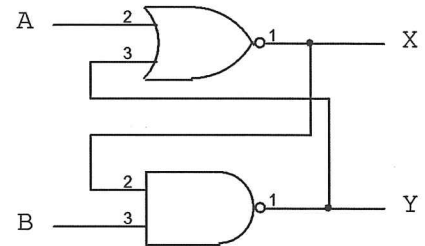# Lab Quiz 8

The following circuit applies to the questions on this quiz. Complete the next state equations, present state – next state table, and state transition diagram to determine the answers.

$$X^* = (A+Y)' = A' \cdot Y'$$

$$Y^* = (B \cdot X)' = B' + X'$$

1. The next state equation for X is:
   - (A) $X^* = A' \cdot Y'$
   - (B) $X^* = A' + Y'$
   - (C) $X^* = A' + B + X$
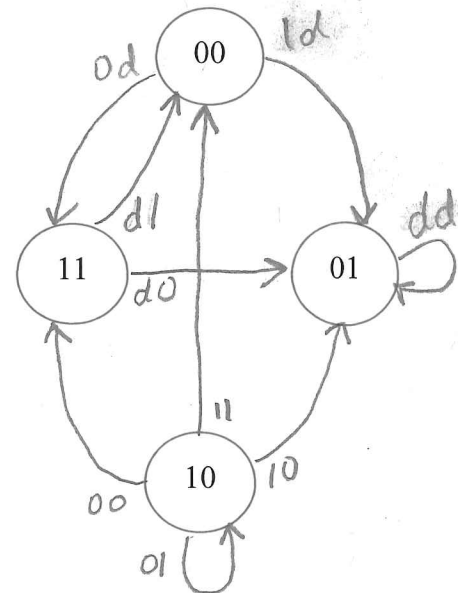   - (D) $X^* = A' \cdot (B + X)$
   - (E) none of the above

2. The next state equation for Y is:
   - (A) $Y^* = B' \cdot X'$
   - (B) $Y^* = B' + X'$
   - (C) $Y^* = B' + A + Y$
   - (D) $Y^* = B' \cdot (A + Y)$
   - (E) none of the above

3. The following state **cannot** occur:
   - (A) X=0, Y=0
   - (B) X=0, Y=1
   - (C) X=1, Y=0
   - (D) X=1, Y=1
   - (E) none of the above

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

4. Based on the state transition diagram, if this feedback sequential circuit is initialized to state **X=0, Y=0** and combination **A=0, B=0** is (continuously) applied to its inputs, the (steady state) output combination will be:
   - (A) X=0, Y=0
   - (B) X=0, Y=1
   - (C) X=1, Y=0
   - (D) X=1, Y=1
   - (E) unpredictable

5. Based on the state transition diagram, if this feedback sequential circuit is initialized to state **X=0, Y=0** and combination **A=0, B=1** is (continuously) applied to its inputs, the outputs will:
   - (A) be unpredictable
   - (B) stay at X=0, Y=0
   - (C) change to X=1, Y=1
   - (D) "oscillate" between X=0, Y=0 and X=1, Y=1
   - (E) none of the above

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