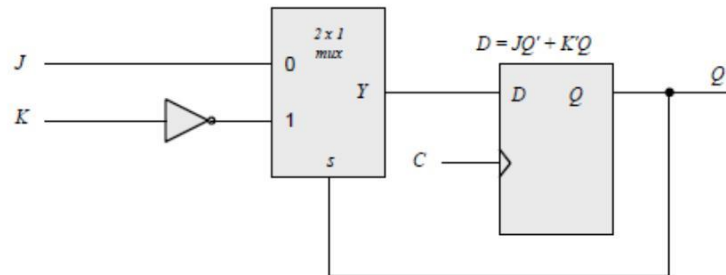
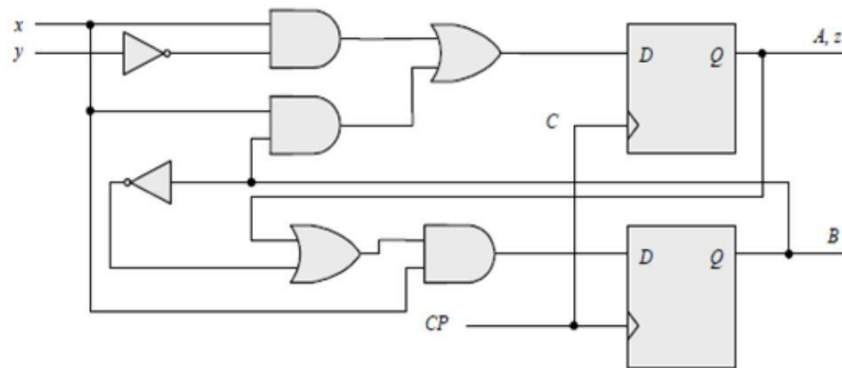


ITI1500
Devoir # 5
SOLUTIONS

5.2



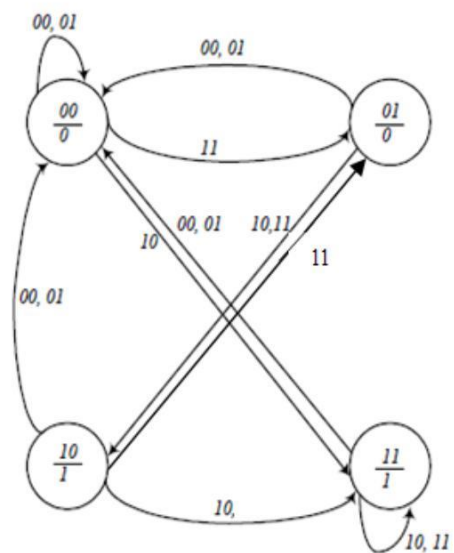
5.6



(b) $A(t+1) = xy' + xB$
 $B(t+1) = xA + xB'$
 $z = A$

Present state		Inputs		Next state		Output
A	B	x	y	A	B	z
0	0	0	0	0	0	0
0	0	0	1	0	0	0
0	0	1	0	1	1	0
0	0	1	1	0	1	0
0	1	0	0	0	0	0
0	1	0	1	0	0	0
0	1	1	0	1	0	0
0	1	1	1	1	0	0
1	0	0	0	0	0	1
1	0	0	1	0	0	1
1	0	1	0	1	1	1
1	0	1	1	0	1	1
1	1	0	0	0	0	1
1	1	0	1	0	0	1
1	1	1	0	1	1	1
1	1	1	1	1	1	1

(c)



$$\begin{aligned} J_A &= x \\ J_B &= x \end{aligned}$$

$$\begin{aligned} K_A &= B \\ K_B &= A' \end{aligned}$$

$$A(t+1) = J_A A' + K_A' A = xA' + B'A$$

$$B(t+1) = J_B B' + K_B' B = xB' + AB$$

$$\begin{array}{ccccc} x & A & B & xA' + B'A & xB' + AB \end{array}$$

$$\begin{array}{ccccc} 0 & 0 & 0 & 0 & 0 \end{array}$$

$$\begin{array}{ccccc} 0 & 0 & 1 & 0 & 0 \end{array}$$

$$\begin{array}{ccccc} 0 & 1 & 0 & 1 & 0 \end{array}$$

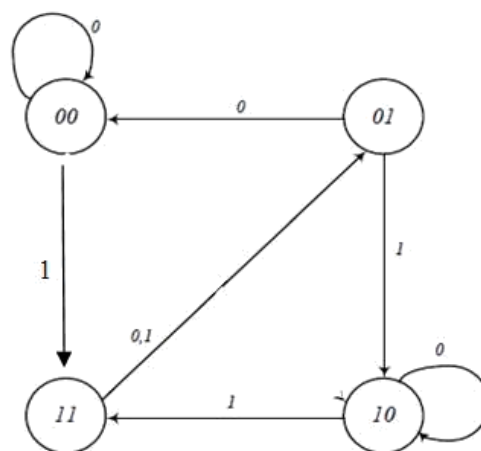
$$\begin{array}{ccccc} 0 & 1 & 1 & 0 & 1 \end{array}$$

$$\begin{array}{ccccc} 1 & 0 & 0 & 1 & 1 \end{array}$$

$$\begin{array}{ccccc} 1 & 0 & 1 & 1 & 0 \end{array}$$

$$\begin{array}{ccccc} 1 & 1 & 0 & 1 & 1 \end{array}$$

$$\begin{array}{ccccc} 1 & 1 & 1 & 0 & 1 \end{array}$$

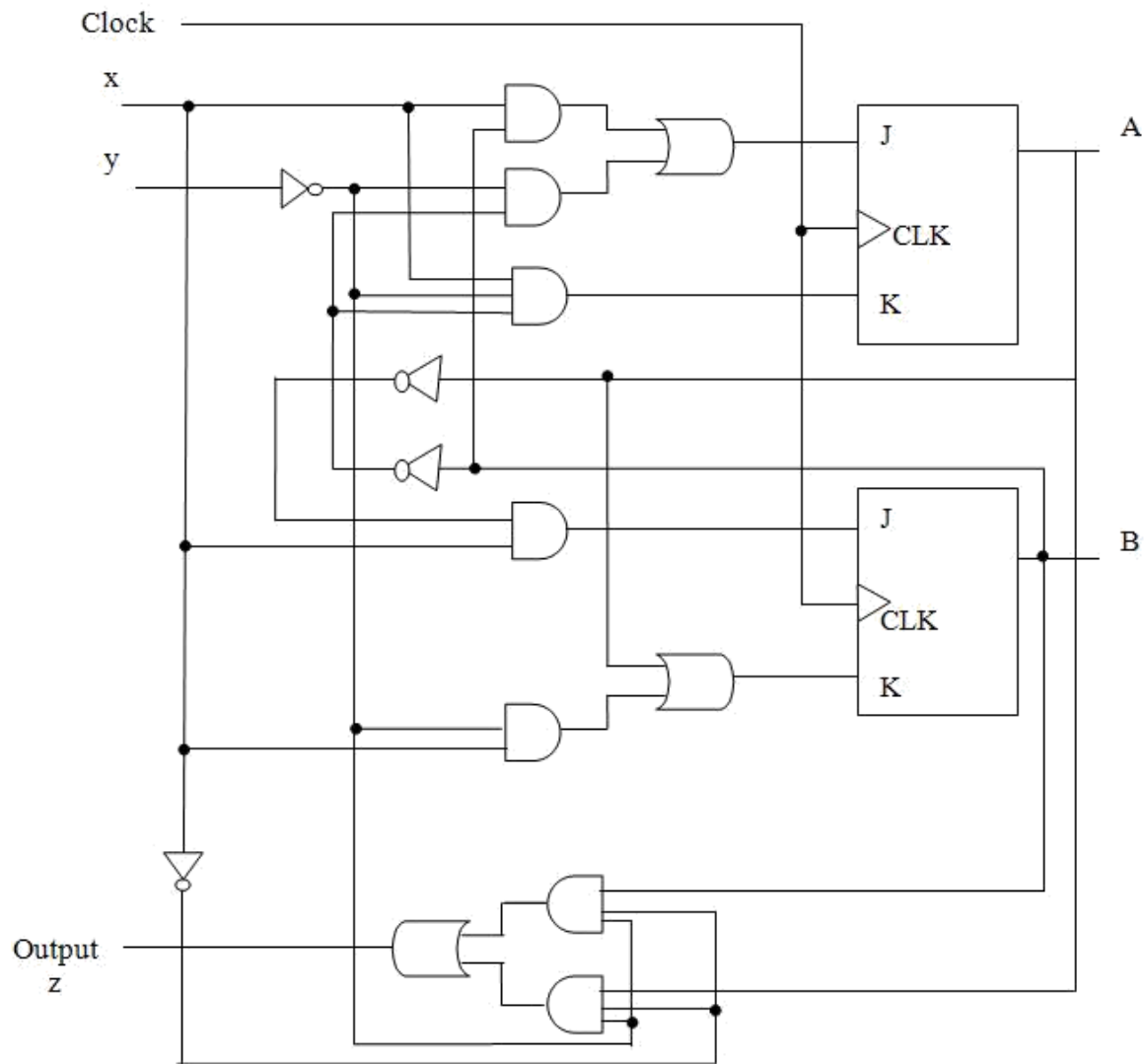


5.10

(a) $J_A = Bx + B'y'$
 $K_A = B'xy'$

$J_B = A'x$
 $K_B = A + xy'$

$Z = Ax'y' + Bx'y'$



$$A(t+1) = (Bx + B'y')A' + (B'xy')'A$$

$$B(t+1) = A'xB' + (A + xy')'B$$

(b)

Present state		Inputs		Next state		Output	FF Inputs			
A	B	x	y	A	B	z	J _A	K _A	J _B	K _B
0	0	0	0	1	0	0	1	0	0	0
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	1	0	1	1	1	1
0	0	1	1	0	1	0	0	0	1	0
0	1	0	0	0	1	1	0	0	0	0
0	1	0	1	0	1	0	0	0	0	0
0	1	1	0	1	0	0	1	0	1	1
0	1	1	1	1	1	0	1	0	1	0
1	0	0	0	1	0	1	1	0	0	1
1	0	0	1	1	0	0	0	0	0	1
1	0	1	0	0	0	0	1	1	0	1
1	0	1	1	1	0	0	0	0	0	1
1	1	0	0	1	0	1	0	0	0	1
1	1	0	1	1	0	0	0	0	0	1
1	1	1	0	1	0	0	1	0	0	1
1	1	1	1	1	0	0	1	0	0	1

(c)

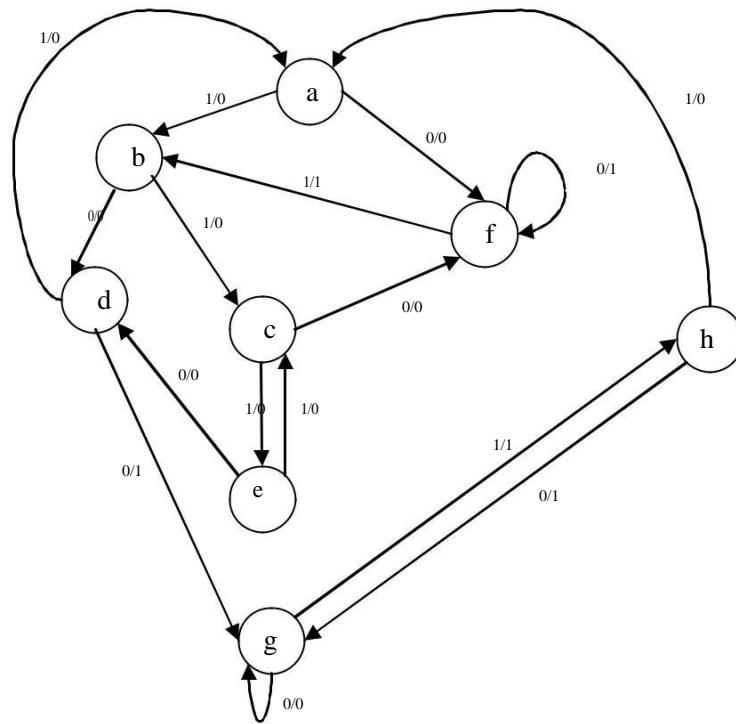
AB \ xy		x			
		00	01	11	10
A	00	m ₀ 1	m ₁	m ₃	m ₂ 1
	01	m ₄	m ₅	m ₇ 1	m ₆ 1
	11	m ₁₂ 1	m ₁₃ 1	m ₁₅ 1	m ₁₄ 1
	10	m ₈ 1	m ₉ 1	m ₁₁ 1	m ₁₀

$$A(t+1) = Ax' + Bx + Ay + A'B'y'$$

AB \ xy		x			
		00	01	11	10
A	00	m ₀	m ₁	m ₃ 1	m ₂ 1
	01	m ₄ 1	m ₅ 1	m ₇ 1	m ₆
	11	m ₁₂	m ₁₃	m ₁₅	m ₁₄
	10	m ₈	m ₉	m ₁₁	m ₁₀

$$B(t+1) = A'B'x + A'B(x' + y)$$

5.12
(a)



(b)

Present state	Next state		Output	
	0	1	0	1
<i>a</i>	<i>f</i>	<i>b</i>	0	0
<i>b</i>	<i>d</i>	<i>a</i>	0	0
<i>d</i>	<i>g</i>	<i>a</i>	1	0
<i>f</i>	<i>f</i>	<i>b</i>	1	1
<i>g</i>	<i>g</i>	<i>d</i>	0	1

(c)

