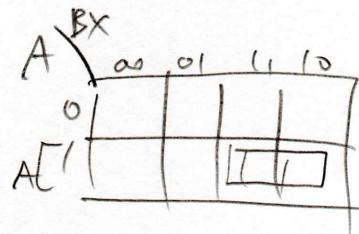
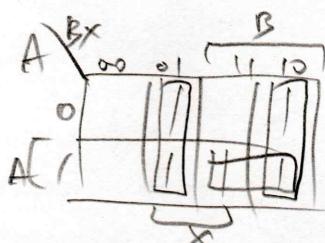
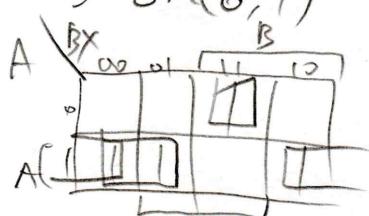


$$(c) A(t+1) = D_A(A, B, X) = \sum m(3, 4, 5, 6)$$

$$B(t+1) = D_B(A, B, X) = \sum m(1, 2, 5, 6, 7)$$

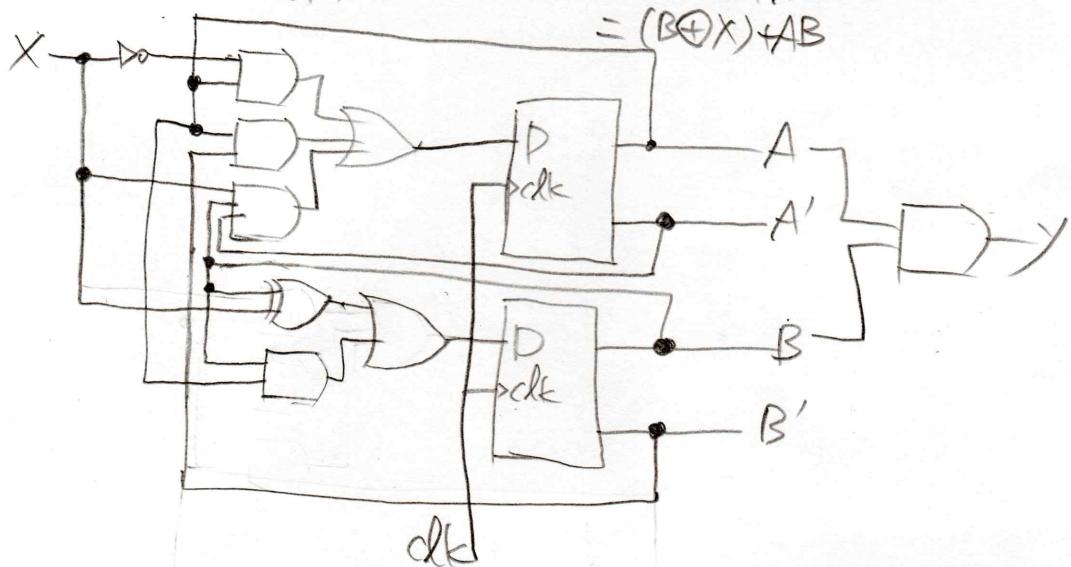
$$Y = \sum m(6, 7)$$



$$D_A = AX' + AB' + A'BX$$

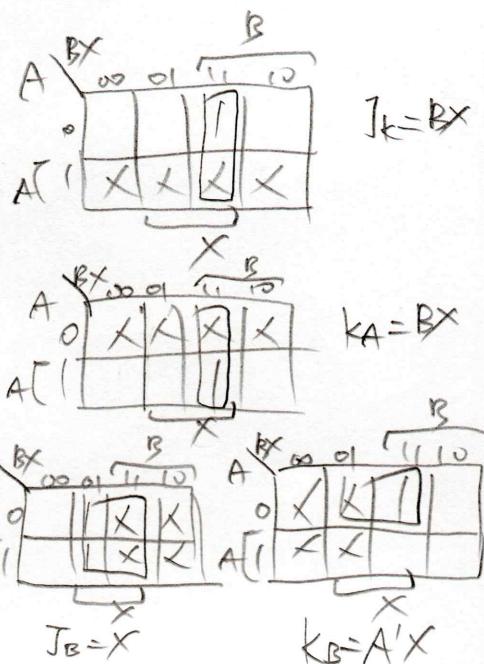
$$D_B = BX + BX' + AB \\ = (B \oplus X) + AB$$

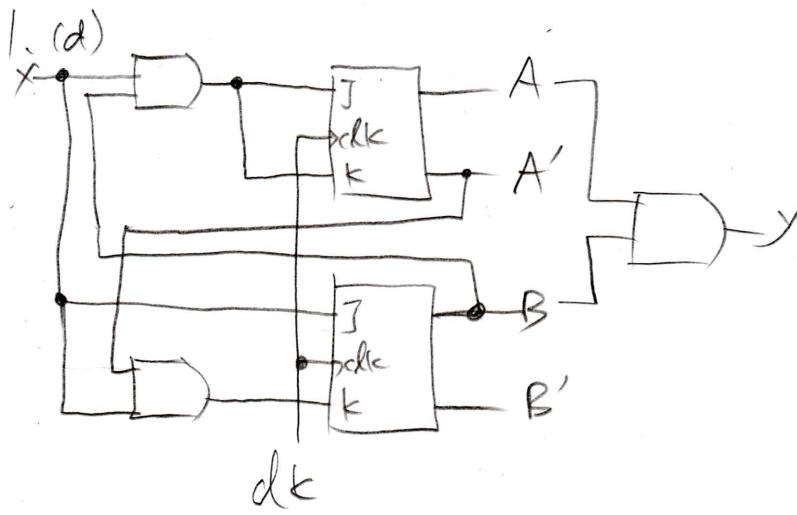
$$Y = AB$$



(d)

目前	輸入	次一	輸出	正反置輸入
A B	X	A B	Y	J _A k _A J _B k _B
0 0	0	0 0	0	0 X 0 X
0 0	1	0 1	0	0 X 1 X
0 1	0	0 1	0	0 X X 0
0 1	1	1 0	0	1 X X 0
1 0	0	1 0	0	X 0 X X
1 0	1	1 1	0	X 0 1 X
1 1	0	1 1	1	X 1 X 0
1 1	1	0 0	1	X 1 0 X



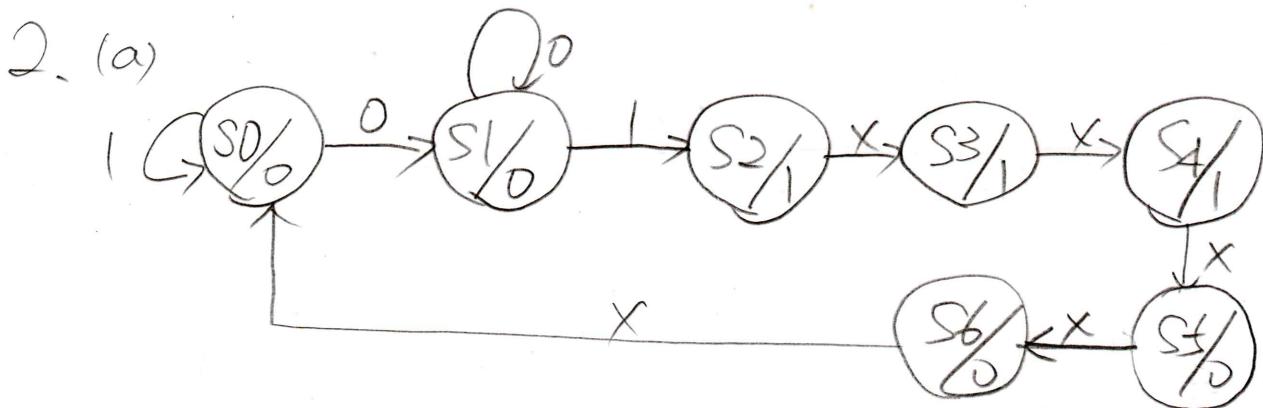
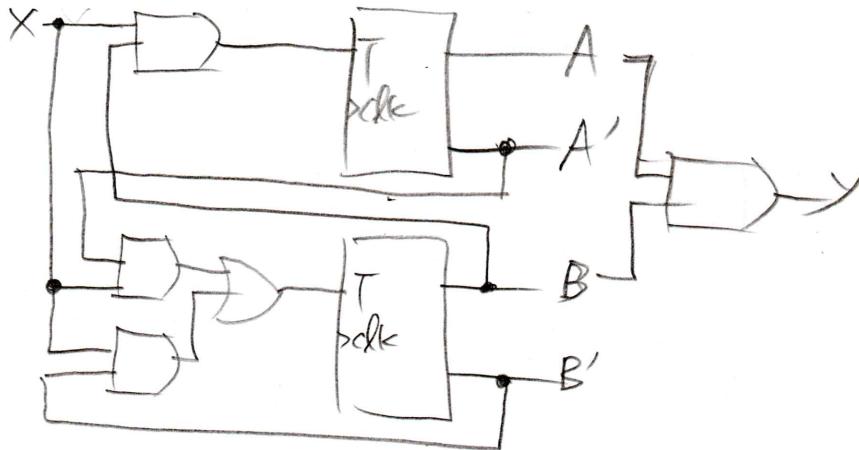


(e)

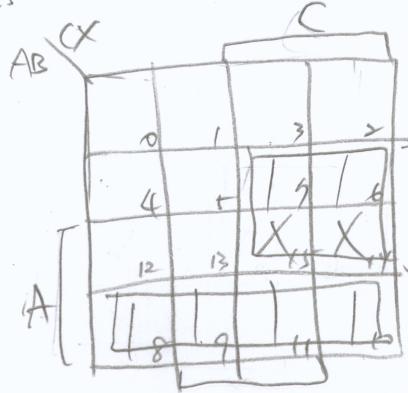
目前	輸入	次一	輸出	正反置輸入	T_A	T_B
A B	X	A B	Y	A\BX B\BX	0	0
0 0	0	0 0	0	0 0 0 1	0	0
0 0	1	0 1	0	0 0 1 0	0	1
0 1	0	0 1	0	0 0 0 0	0	0
0 1	1	1 0	0	0 0 1 1	1	1
1 0	0	1 0	0	0 0 0 0	0	0
1 0	1	1 1	0	0 0 1 1	0	1
1 1	0	0 1	1	0 0 0 0	0	0
1 1	1	0 1	1	0 0 1 1	1	0

$T_A = BX$

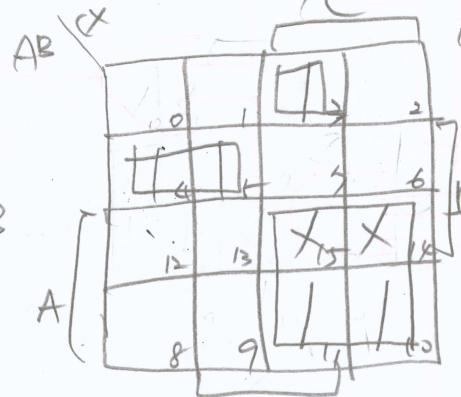
$T_B = A'X + B'X$



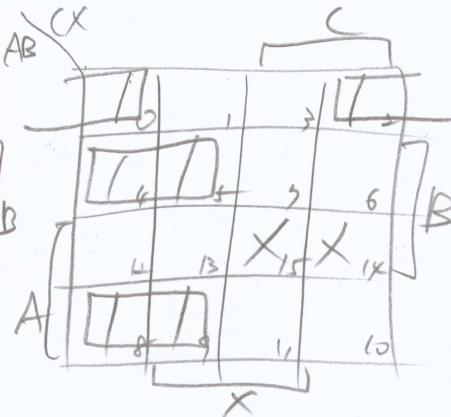
目前 輸入	次一 輸出	Y	JK						T型 正反器輸入		
			J _A	K _A	J _B	K _B	J _C	K _C	T _A	T _B	T _C
M ₀ 000 0	001	0	0	X	0	X	1	X	0	0	1
M ₁ 000 1	000	0	0	X	0	X	0	X	0	0	0
M ₂ 001 0	001	0	0	X	0	X	X	0	0	0	0
M ₃ 001 1	010	0	0	X	1	X	X	1	0	1	1
M ₄ 010 X	011	1	0	X	X	0	1	X	0	0	1
M ₅ 011 X	100	1	1	X	X	1	X	1	1	1	1
M ₆ 100 X	101	1	X	0	0	X	1	X	0	0	1
M ₇ 101 X	110	0	X	0	1	X	X	1	0	1	1
M ₈ 110 X	000	0	X	1	X	1	0	X	1	1	0
M ₉ 110 X	000	0	X	1	X	1	0	X	1	1	0
M ₁₀ 110 X	000	0	X	1	X	1	0	X	1	1	0
M ₁₁ 110 X	000	0	X	1	X	1	0	X	1	1	0
M ₁₂ 110 X	000	0	X	1	X	1	0	X	1	1	0
M ₁₃ 110 X	000	0	X	1	X	1	0	X	1	1	0
M ₁₄ 111 X	XXX	X	XX	XX	XX	XX	XX	X	XX	XX	
M ₁₅											



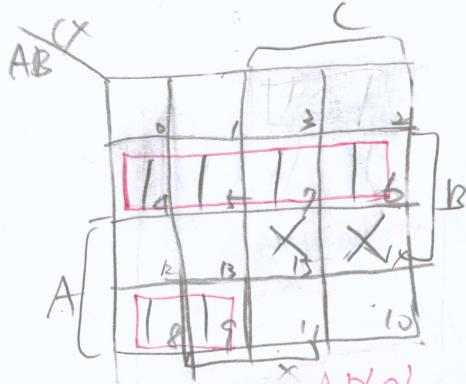
$$D_A = BC + AB'$$



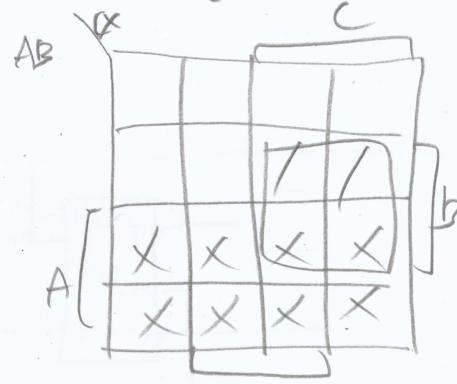
$$D_B = ACT + A'BC' + A'B'CX$$



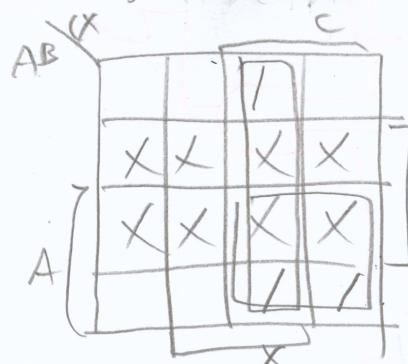
$$D_C = AB'C + A'BC' + A'B'X$$



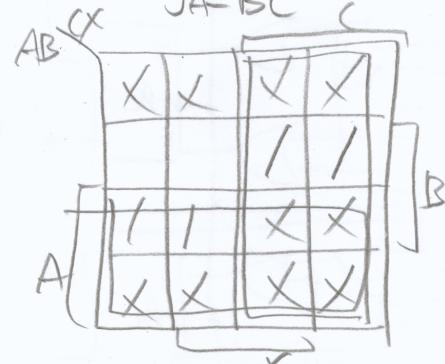
$$Y = A'B + ABC'$$



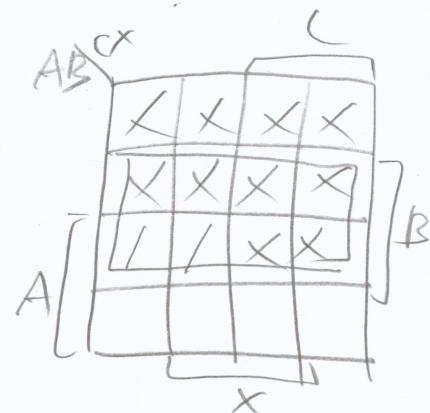
$$J_A = BC$$



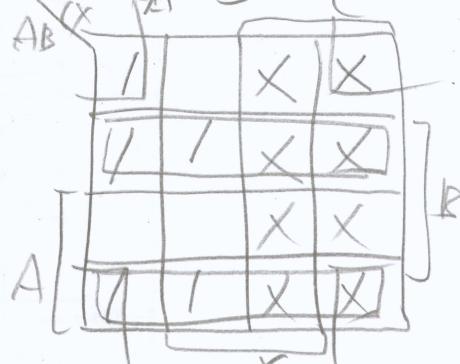
$$J_B = AC + CX$$



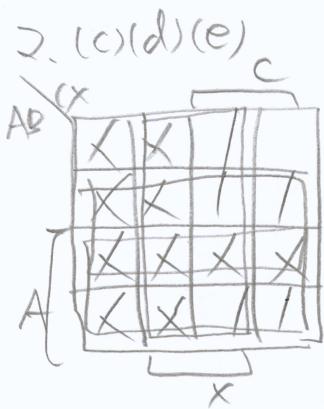
$$J_C = B'X + \bar{A}B + AB = B'X + (A \oplus B)$$



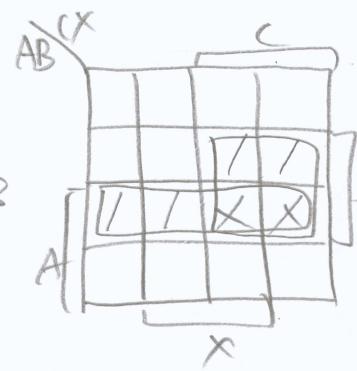
$$KA = B$$



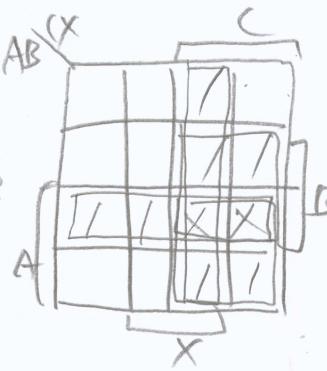
$$KB = A + C$$



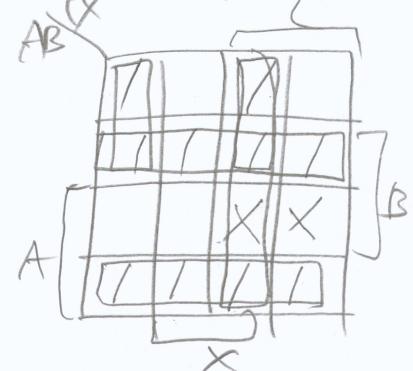
$$k_c = A + B + X$$



$$T_A = AB + BC$$

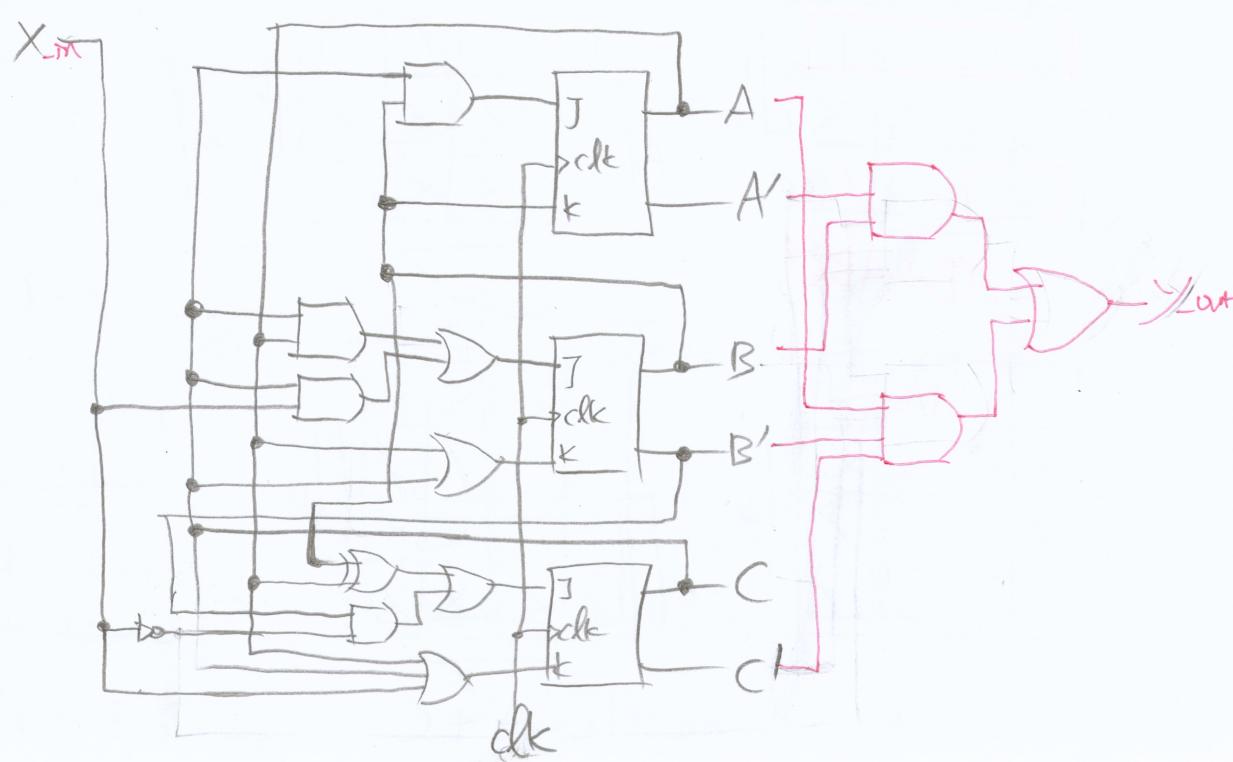
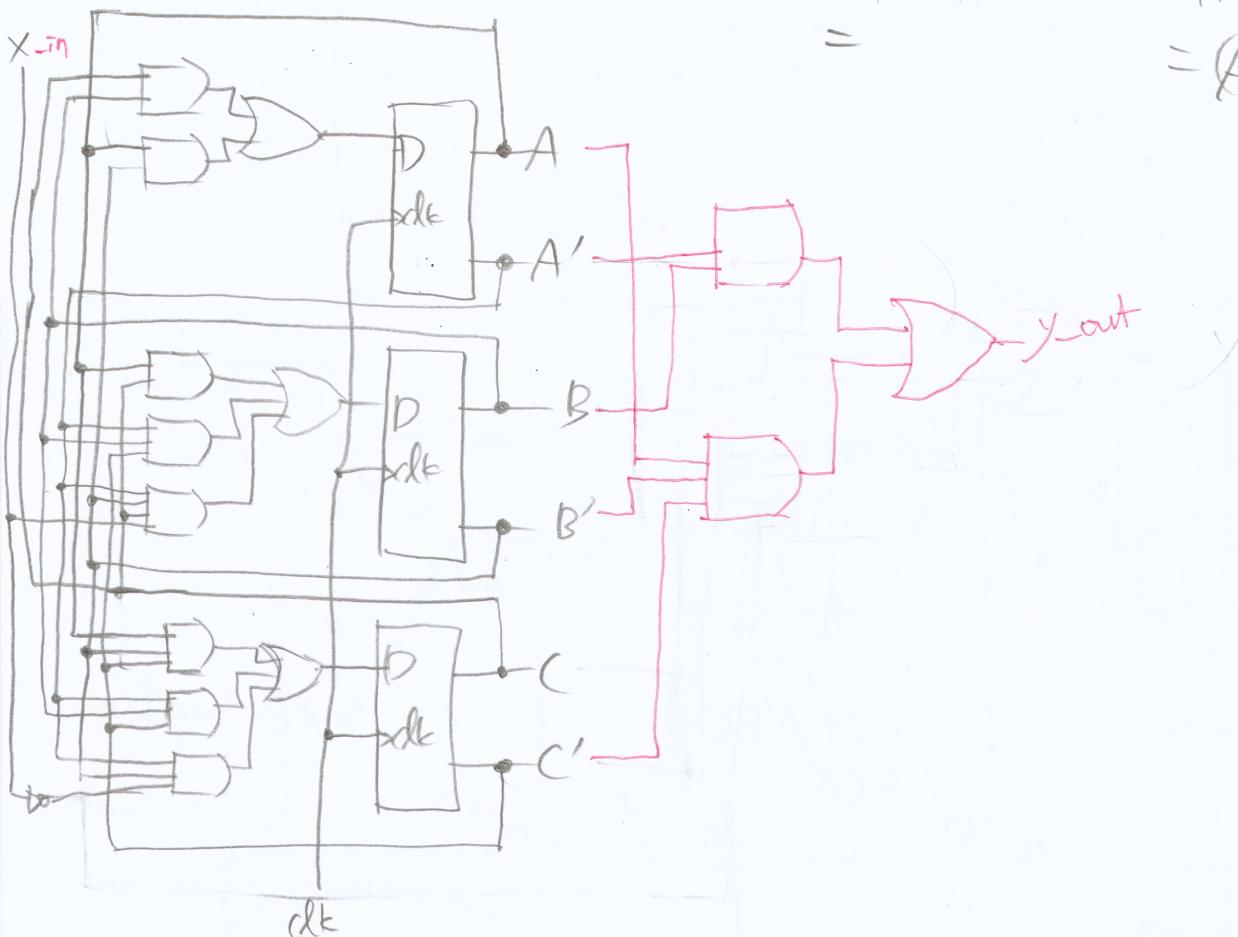


$$T_B = AB' + CX + BC' + AC$$

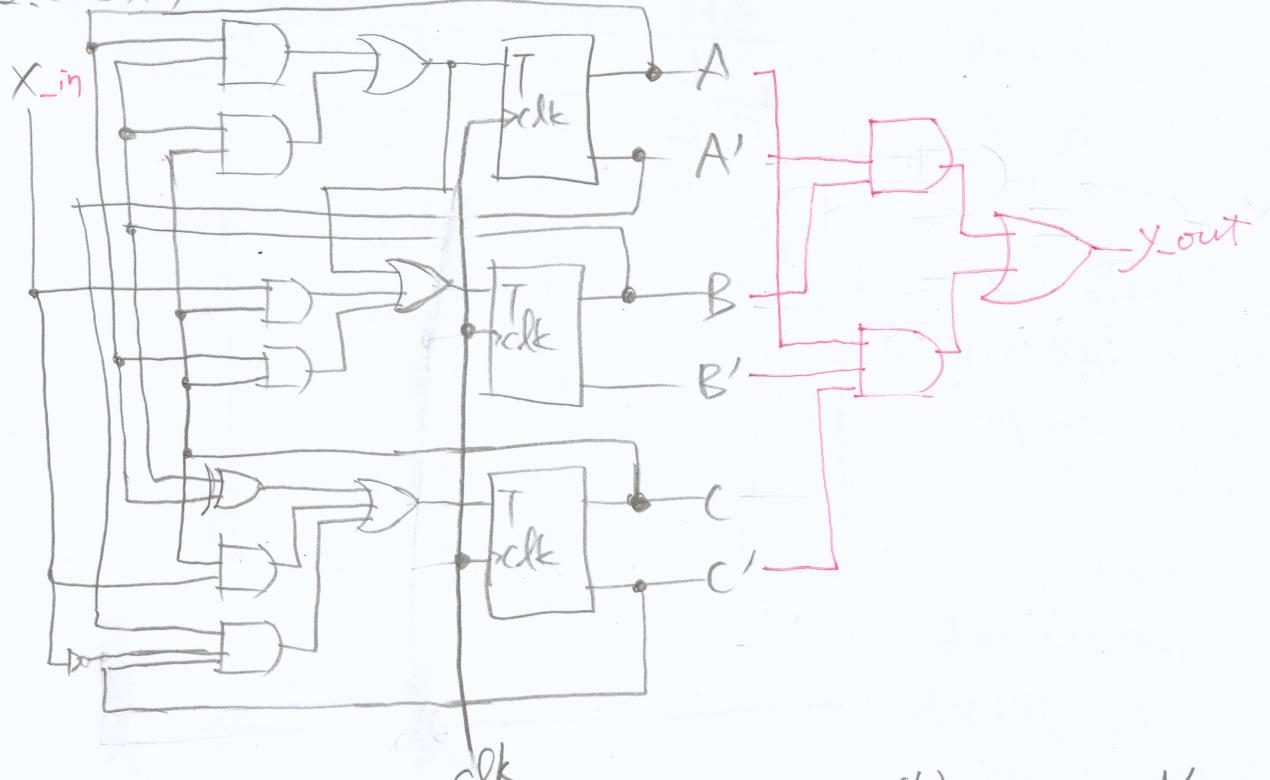


$$T_C = \underline{AB'} + CX + \underline{A'B} + \underline{A'C'X'}$$

$$= (A \oplus B) + CX + A'C'X'$$



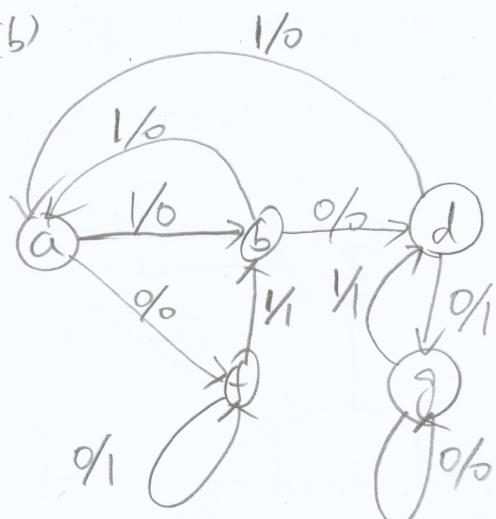
2.(c)(d)(e)



3. (a)

目前狀態	次一狀態		輸出	
	$x=0$	$x=1$	$x=0$	$x=1$
a	f	b	0	0
b	d	a	0	0
d	f	a	1	0
f	f	b	1	1
g	g	d	0	1

(b)



(c)		a	f	b	d	a	f	b	d	a	b
輸入	0	1	0	1	0	0	1	0	1	1	1
輸出	0	1	0	0	1	1	0	0	0	0	0

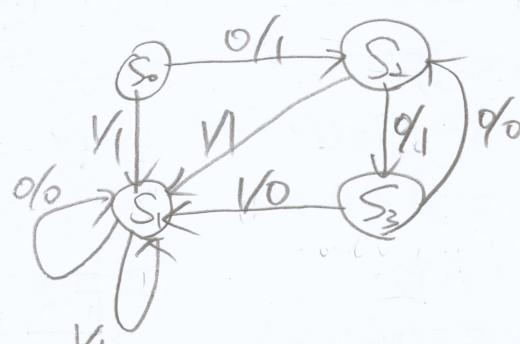
$$4. (a) D_A = (A+B')X'$$

$$D_B = X + (A \oplus B)$$

$$Y = A'X + B'$$

目前 AB	輸入 X	次一 AB		輸出 Y
		A	B	
m_0 0 0	0	0	1	1
m_1 0 1	1	0	1	1
m_2 1 0	0	0	1	0
m_3 1 1	1	0	1	1
m_4 1 0	0	1	1	1
m_5 1 1	1	0	0	0
m_6 1 1	0	1	0	0
m_7 1 1	1	1	0	0

$$(b) S_0=00, S_1=01, S_2=10, S_3=11$$



5.

$$(a) J_A = X(A+B') \quad k_A = A+B'$$

$$J_B = X+(A \oplus B) \quad k_B = X$$

$$Y = A'+B'$$

$$A(A+1) = J_A A' + k_A' B$$

$$= X'(A+B') \cdot A' + (A+B')' A$$

$$= X'A'B' + (A'B')'A$$

$$= A'B'X'$$

$$B(A+1) = J_B B' + k_B' B$$

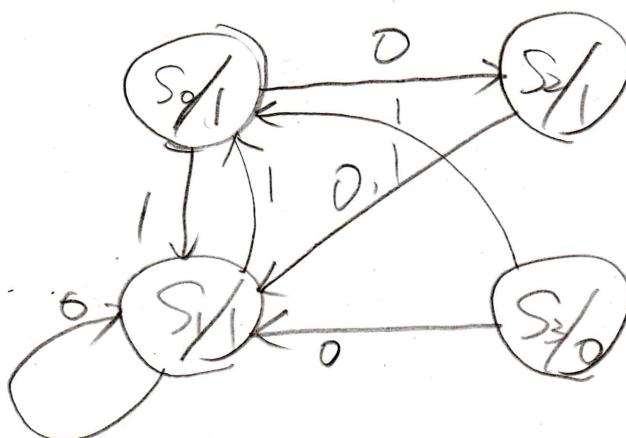
$$= [X+(A \oplus B)] \cdot B' + X'B$$

$$= B'X + (A \oplus B)B' + X'B$$

$$= (B \oplus X) + AB'$$

目前		輸入	次-	輸出
A	B	X	A	Y
0	0	0	1	1
0	0	1	0	1
0	1	0	0	1
0	1	1	0	0
1	0	0	0	1
1	0	1	0	1
1	1	0	0	0
1	1	1	0	0

$$(b) S_0=00, S_1=01, S_2=10, S_3=11$$



6.

$$(a) T_A = X(A+B)$$

$$T_B = A+X$$

$$Y = A+B$$

$$A(A+1) = T_A \oplus A$$

$$= [X(A+B)] \oplus A$$

$$= [X(A+B)]'A + [X(A+B)]A'$$

$$= (X+A'B')A + A'BX$$

$$= AX' + A'BX$$

$$B(A+1) = T_B \oplus B = (A+X) \oplus B$$

$$= (A+X)'B + (A+X)B'$$

$$= A'XB + AB' + B'X$$

目前		輸入	次-	輸出
A	B	X	A	Y
0	0	0	0	0
0	0	1	0	0
0	1	0	0	1
0	1	1	0	1
1	0	0	1	1
1	0	1	1	1
1	1	0	1	1
1	1	1	0	1

$$(b) S_0=00, S_1=01 \\ S_2=10, S_3=11$$

