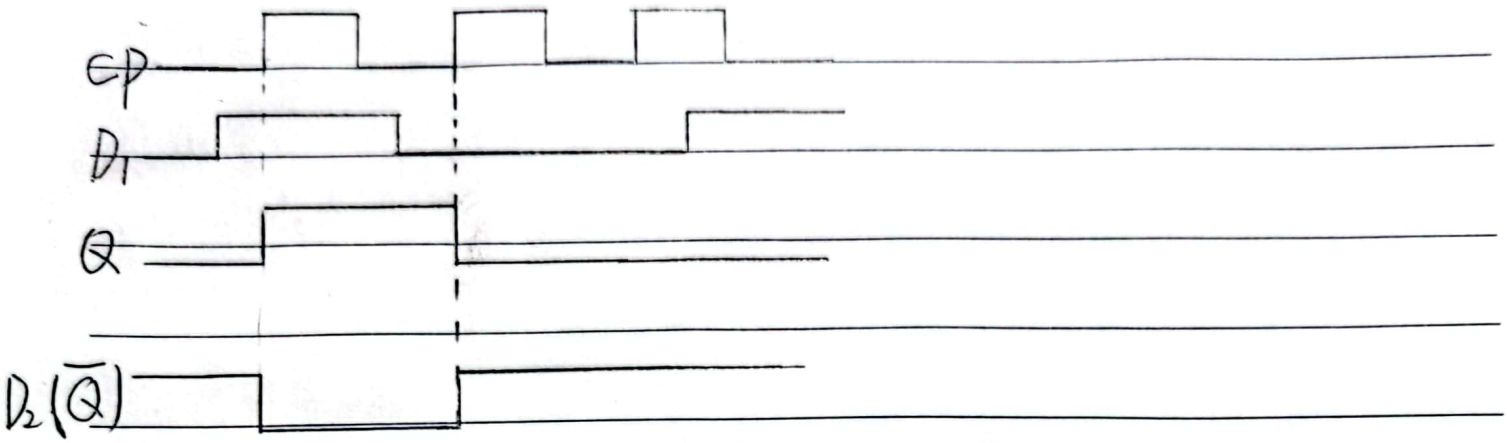
3.2



激励方程

3.3. $D_2 = Q_2 + Q_1 \oplus (Q_1 \oplus Q_0)$

$D_1 = Q_2$

$D_0 = Q_1$

状态输出表：$Q_2^{n+1} = D_2$, $Q_1^{n+1} = D_1$, $Q_0^{n+1} = D_0$

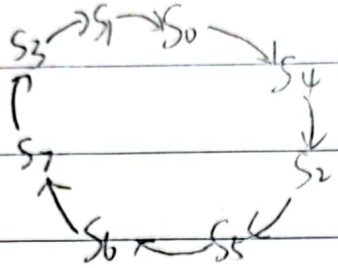
$Q_2Q_1Q_0$	Q_2^{n+1}	Q_1^{n+1}	Q_0^{n+1}
000	1	0	0
001	0	0	0
010	1	0	1
011	0	0	1
100	0	1	0
101	1	1	0
110	1	1	1
111	0	1	1

状态输出表

Q	Q^{n+1}
S_0	S_4

S_1	S_0
S_2	S_5
S_3	S_1
S_4	S_2
S_5	S_6
S_6	S_7
S_7	S_3

状态图



3.4.

图(b)是时序电路

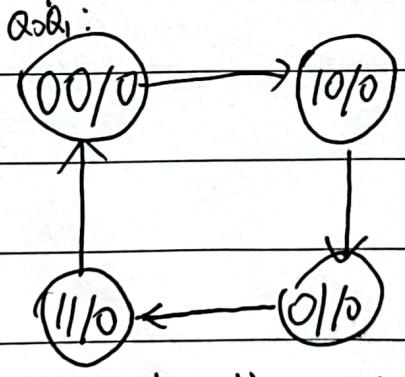
图(a)的输出只受输入控制，图(b)的输出既受输入影响也受现态影响的.

3.6.

设左侧触发器为0，右侧触发器为1

$D_0=\overline{Q_0}$，$D_1=Q_0\oplus Q_1$，$F=Q_1\cdot Q_2$

Q_0Q_1	$Q_0^{n+1}Q_1^{n+1}$
00	10
01	11
10	01
11	00



可知此为一个模4的循环计数器，每完成一次循环就输出一次1.

3.7. 设左侧命名为1，右侧命名为2

$EN1=Y$，$EN2=\overline{X}YQ_1$

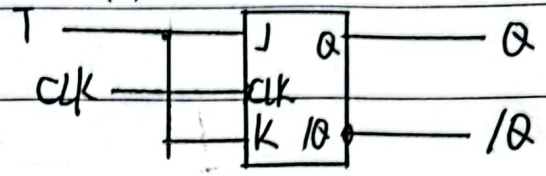
$Q_1^{n+1}=Y\oplus Q_1=\overline{Y}Q_1+Y\overline{Q_1}$，$Q_2^{n+1}=EN_2\oplus Q_2=\overline{X}YQ_1\overline{Q_2}+(X+\overline{Y}+\overline{Q_1})\cdot Q_2$

$=\overline{X}YQ_1\overline{Q_2}+XQ_2+\overline{Y}Q_2+\overline{Q_1}Q_2$

$Z=\overline{X}\overline{Q_2}$

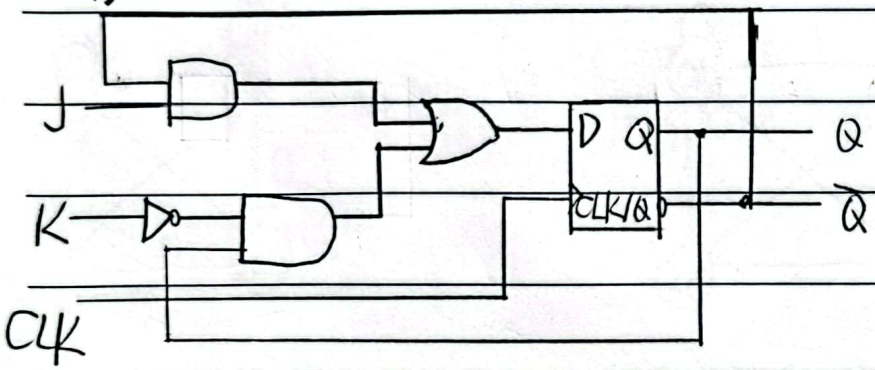
Q_1Q_2 / XY	00	01	10	11
S_0 00	00/1	10/1	00/0	10/0
S_1 01	00/0	11/0	01/0	11/0
S_2 10	10/1	01/1	10/0	00/0
S_3 11	11/0	00/0	11/0	01/0

(5).

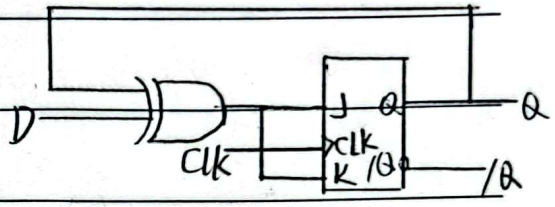


3.8.

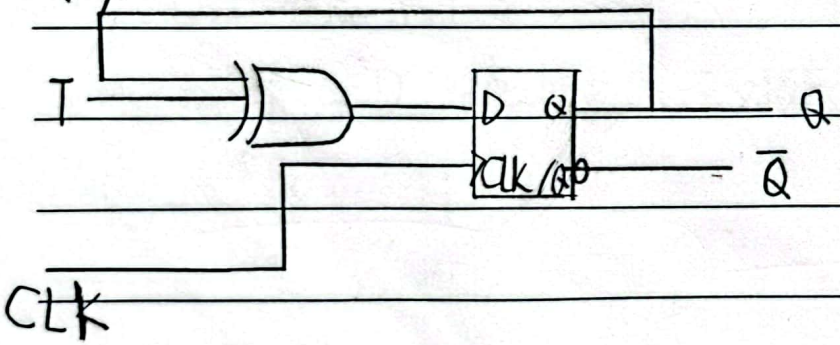
(1).



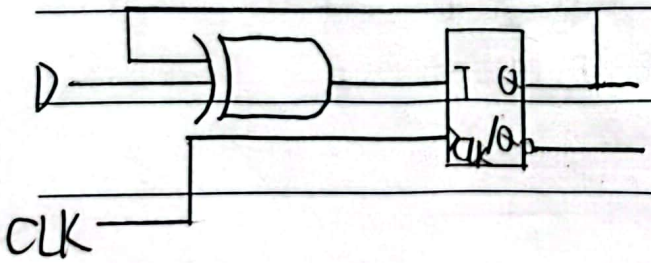
(6).



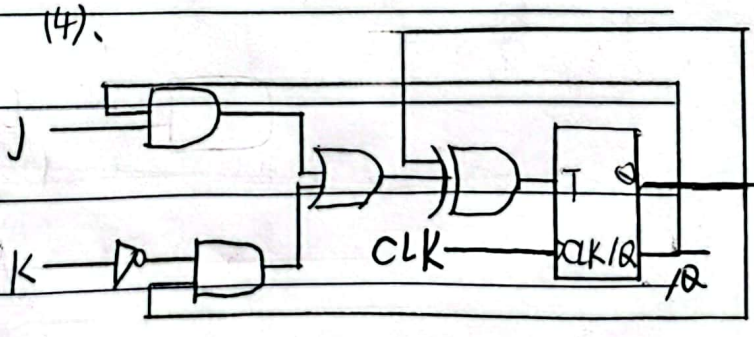
(2)



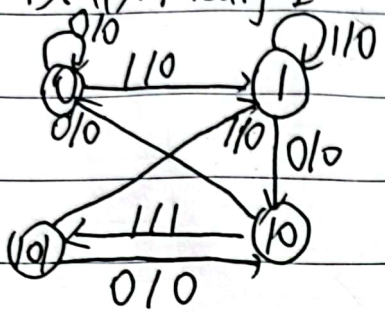
(3)



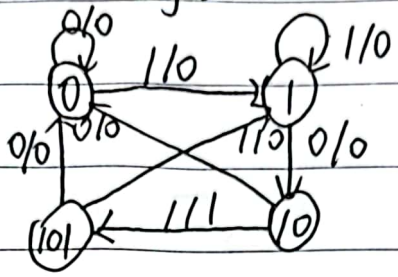
(4).



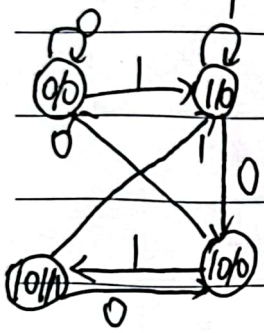
3.13. (1). Mealy型



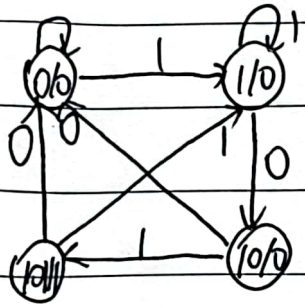
(2). Mealy型



Moore型



Moore型



3.14. 设新状态 X、Y、Z

X对应原A、D、Y对应原B、C、Z对应原E

现y \ X1X0	00	01	11
X	X/1	Y/0	Z/1
Y	X/0	Z/0	Y/1
Z	X/1	Y/0	Y/1

3.15.

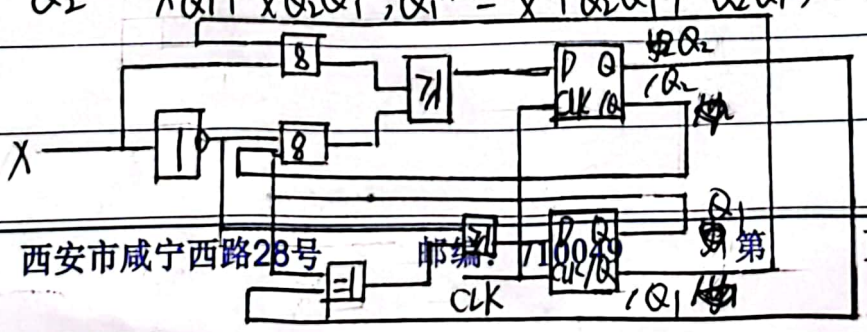
新状态A、B，A对应1、2、3、4，B对应2、5、6

y \ X1X0	00	01	11	10
A	A	A	B	A
B	B	A	A	B

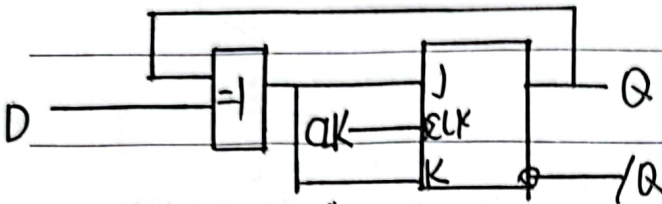
3.16. 由二次态表可知

次态方程：~~$Y_2^{n+1}=X\bar{Y}_1+\bar{X}\bar{Y}_2Y_1$，$Y_1^{n+1}=\bar{X}+\bar{Y}_2Y_1+Y_2\bar{Y}_1$，$Z=Y_2\bar{Y}_1$~~

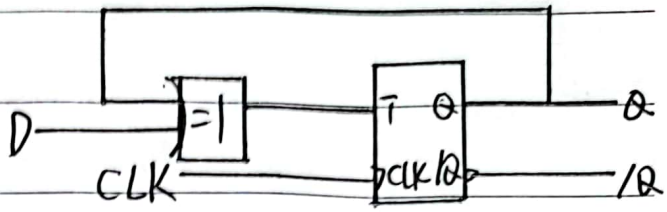
D触发器：$Q_2^{n+1}=X\bar{Q}_1+\bar{X}\bar{Q}_2Q_1$，$Q_1^{n+1}=\bar{X}+\bar{Q}_2Q_1+Q_2\bar{Q}_1$，$Z=Q_2\bar{Q}_1$



用 J-K 触发器时：

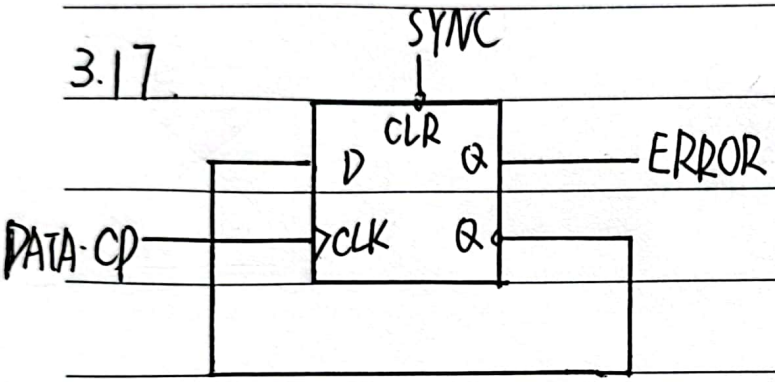


用 T 触发器时



可用此组合代替原JJ触发器即可

3.17.



3.19，5个状态，用000～100来表示5个状态，用JK触发器实现

$Q_2Q_1Q_0$	X=0	X=1
000	100	001
001	000	010
010	001	011
011	010	100
100	011	000

画卡诺图

Q_1Q_0 \ Q_2X	00	01	11	10
00	100	00	001	001
01	000	010	d	d
11	010	100	d	d
10	001	011	d	d

$Q_2^{n+1}\ Q_1^{n+1}\ Q_0^{n+1}$

$Q_2^{n+1} = D_2 = \bar{Q}_2\bar{Q}_1\bar{Q}_0\bar{X} + \bar{Q}_2Q_1Q_0X$

$Q_1^{n+1} = \bar{Q}_1\bar{X} + \bar{Q}_1Q_0X + Q_1Q_0\bar{X} + Q_1\bar{Q}_0X$

$Q_0^{n+1} = Q_2\bar{X} + Q_1\bar{Q}_0 + \bar{Q}_2\bar{Q}_0X$