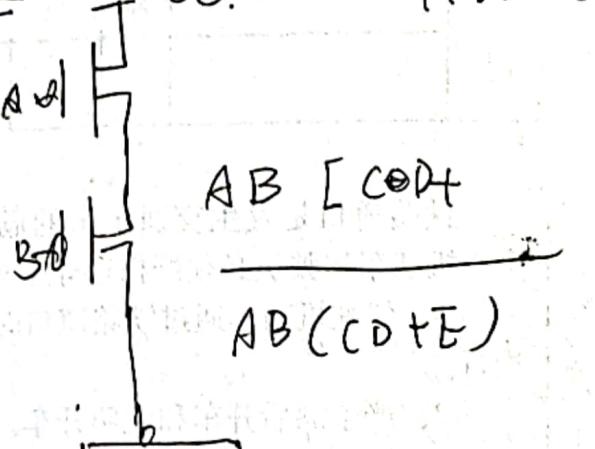


2022 年 收集，一卷

王振波

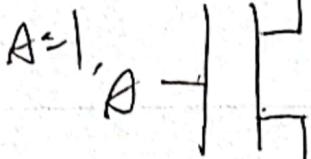
b/ $f = \frac{A+B+(C+D) \cdot E}{V_{cc}}$ 1120210446



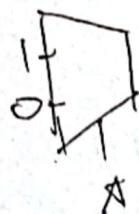
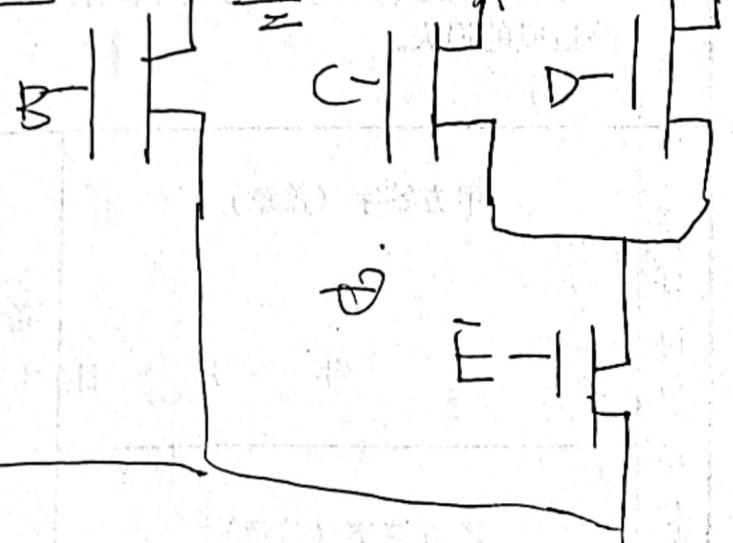
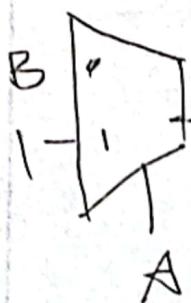
$A+B$

$A \oplus B$

$A=1$

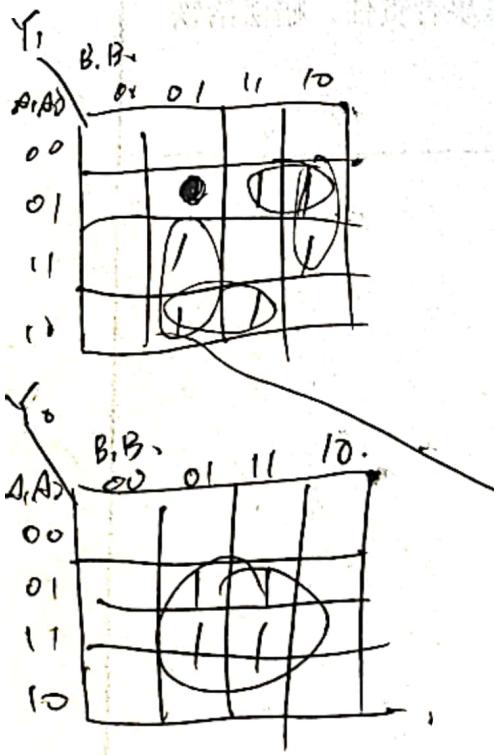


$A+B$



3 2 1 0			
0 0 0 0	0 0 0 0	0	$Y_3 = \sum m(15)$
0 0 0 1	0 0 0 0	1	
0 0 1 0	0 0 0 0	2	$Y_2 = \sum m(10, 11, 14)$
0 0 1 1	0 0 0 0	3	
0 1 0 0	0 0 0 0	4	$Y_1 = \sum m(6, 7, 9, 11, 13, 14)$
0 1 0 1	0 0 0 0	5	
0 1 1 0	0 0 1 0	6	$Y_0 = \sum m(5, 7, 13, 15)$
0 1 1 1	0 0 1 1	7	

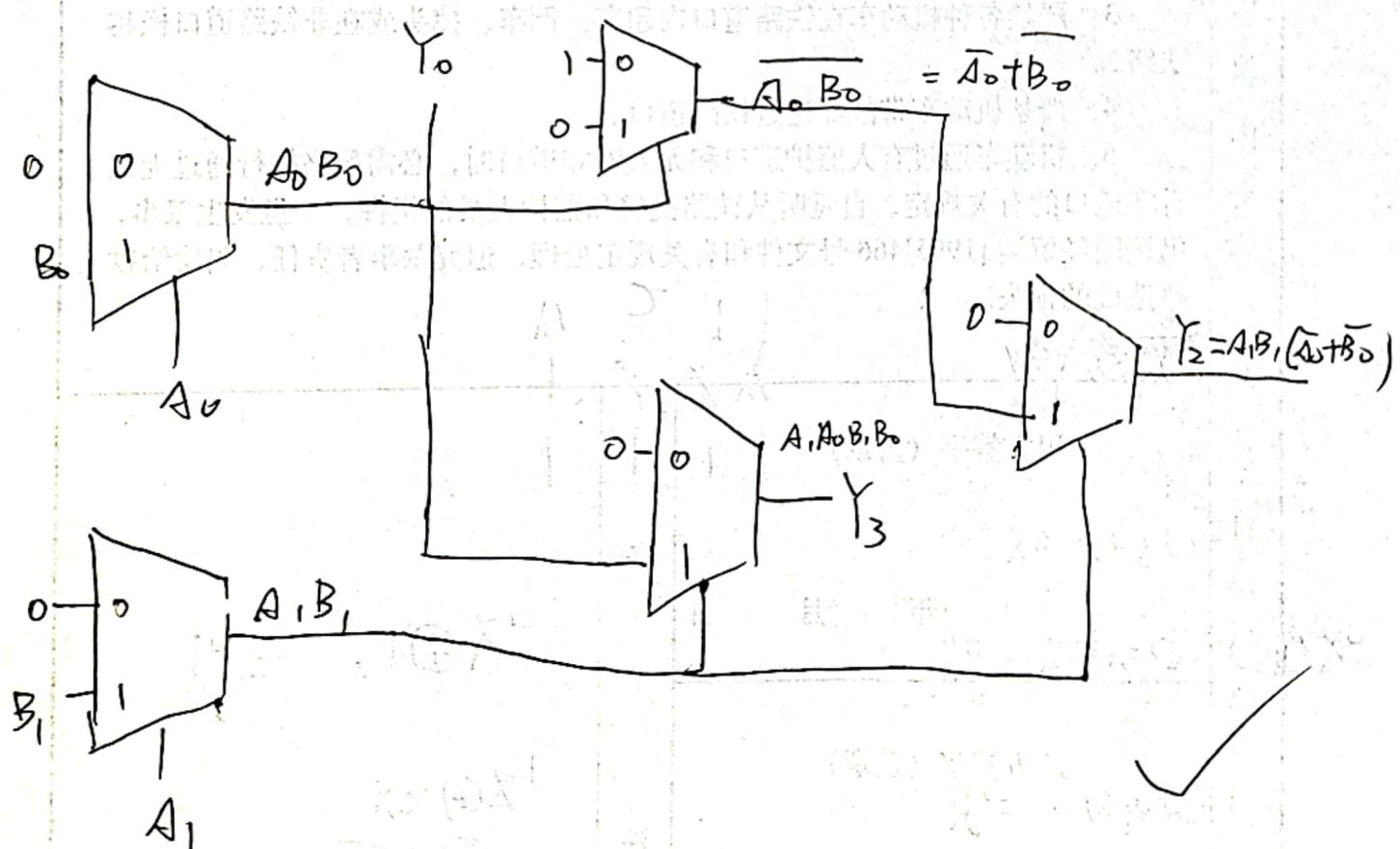
1 0	0 0	0 0 0 0	8	$Y_3 = A, A_0 B_1 B_0$
1 0	0 1	0 0 1 0	9	
1 0	1 0	0 1 0 0	10	
1 0	1 1	0 1 1 0	11	
1 1	0 0	0 0 0 0	12	
1 1	0 1	0 0 1 1	13	
1 1	1 0	0 1 1 0	14	
1 1	1 1	1 0 0 1	15	



$$\begin{aligned}
 Y_2 &= \cancel{A} \cancel{A_0} + A \bar{A}_0 B_1 + A_1 B_1 \bar{B}_0 \\
 &= A, B_1 (\bar{A}_0 + \bar{B}_0) \\
 Y_1 &= \bar{A}_1 A_0 B_1 + A_0 B_1 \bar{B}_0 \\
 &\quad + A_1 A_0 B_0 + A_1 \bar{B}_1 B_0
 \end{aligned}$$

$$Y_0 = A_0 B_0.$$

$$\overline{A_0 + B_0} = \overline{A_0} \overline{B_0}$$



3.

$$(1) Y_3 = X_3$$

$$Y_2 = \overline{X_2 \oplus X_3} = \overline{\overline{X_2} X_3 + \overline{X_3} X_2}$$

$$\underline{Y_1 = \overline{M} \overline{X_2} \oplus \overline{M} Y_2 \oplus X_1}$$

$$= (\overline{M} X_2 + \overline{M} Y_2) \oplus X_1$$

$$= [M X_2 + \overline{M} (X_2 \oplus X_3)] \oplus X_1$$

$$\underline{Y_0 = \overline{M} \overline{X_1}, \overline{M} Y_1 \oplus X_0}$$

$$= (M X_1 + \overline{M} Y_1) \oplus X_0$$

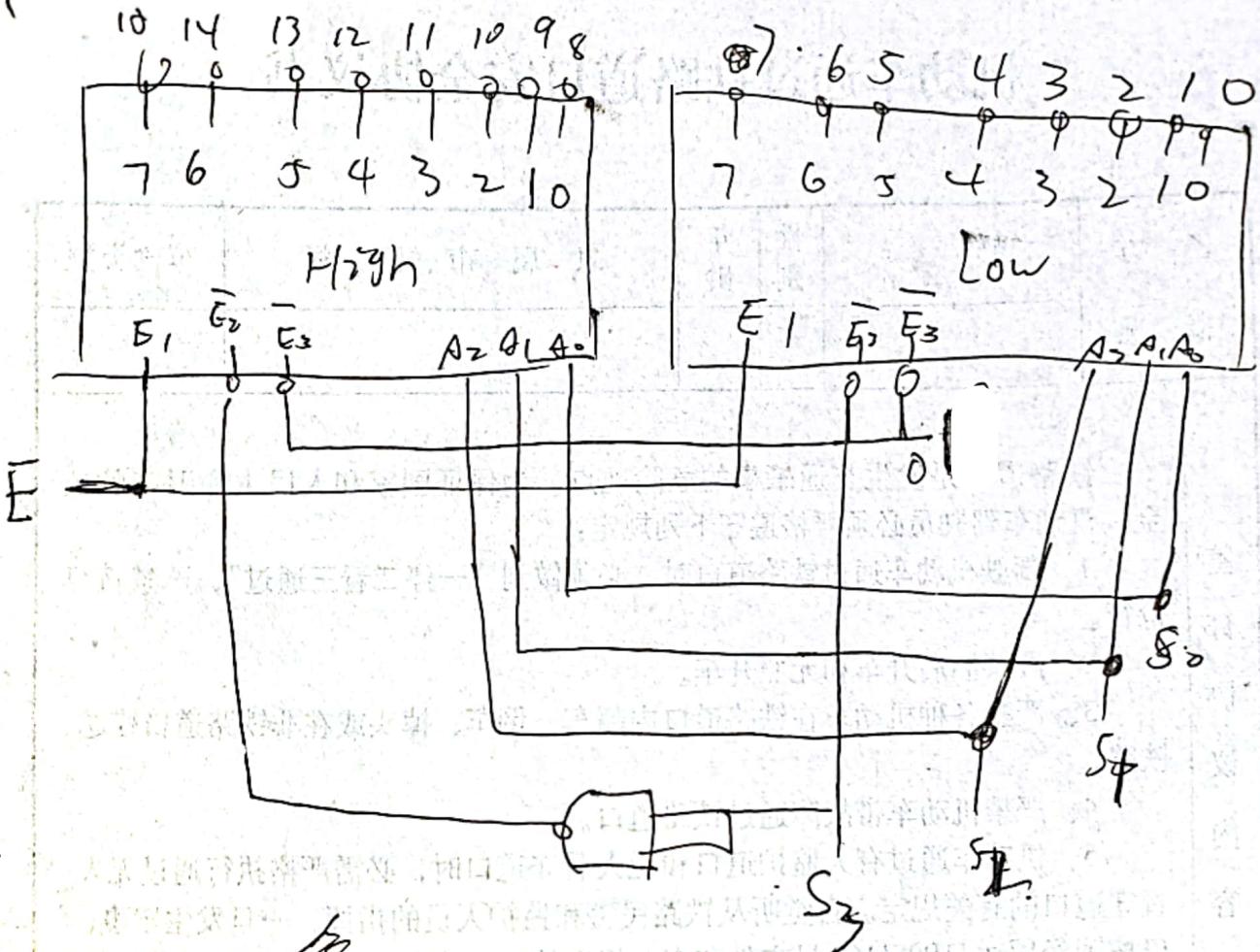
$$= [M X_1 + \overline{M} [M X_2 + \overline{M} (X_2 \oplus X_3)]] \oplus X_0$$

(2) $M=1$ 时, 将 $X_3 X_2 X_1 X_0$ 转为格雷码。

即 $X_3 X_2 X_1 X_0$ 的格雷码为 $Y_3 Y_2 Y_1 Y_0$

$M=0$ 时, 将 $X_3 X_2 X_1 X_0$ 转为二进制码, 即解
格雷码, 即西格码 $X_3 X_2 X_1 X_0$ 的二进制码为 $Y_3 Y_2 Y_1 Y_0$

4.



5.

(1) 下

	A	B	AB	0
$X_1 X_2$	00	01	11	10
A	0	1	1	0
B	0	1	1	0
AB	0	0	1	0
0	1	1	1	1

$$F = \sum m(1, 3, 5, 7)$$

$$F = \sum m(0, 2, 4, 6, 8, 9, 10, 11, N)$$

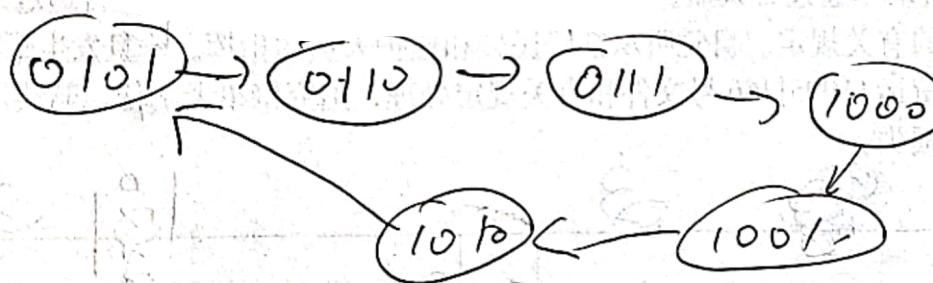
5

		Y ₀	Y ₁	Y ₂	
X ₁ X ₀		00	01	11	10
00		1	0		1
01		0	1	1	0
11		0	0	1	0
10		1	1	1	1

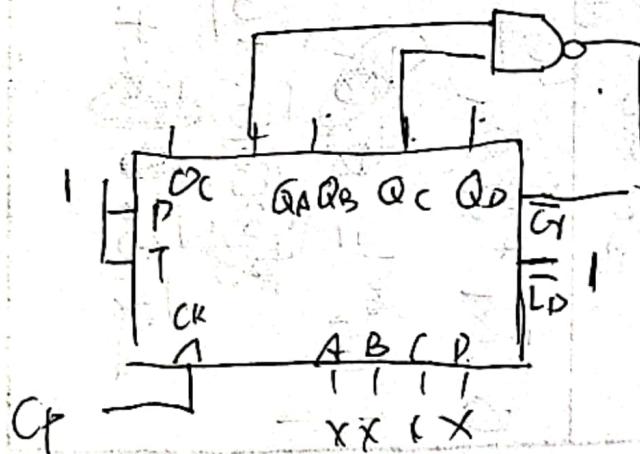
$$F = \frac{(X_0 + Y_0) (\bar{X}_1 + \bar{Y}_0 + Y_1) (X_1 + \bar{Y}_1 + Y_0)}{(X_1 + X_0 + Y_1 + \bar{Y}_0)}$$

$$F = \overline{X_0 + Y_0} + \overline{\bar{Y}_1 + \bar{X}_0 + Y_1} + \overline{X_1 + \bar{Y}_1 + Y_0} + \overline{X_1 + X_0 + Y_1 + \bar{Y}_0}$$

6.

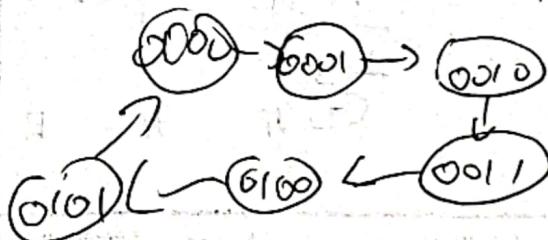


$$\begin{array}{l} (1) \\ \text{1010} \\ \text{1010} \end{array} \xrightarrow{5, 6, 7, 8, 9, 10} \quad m=6.$$



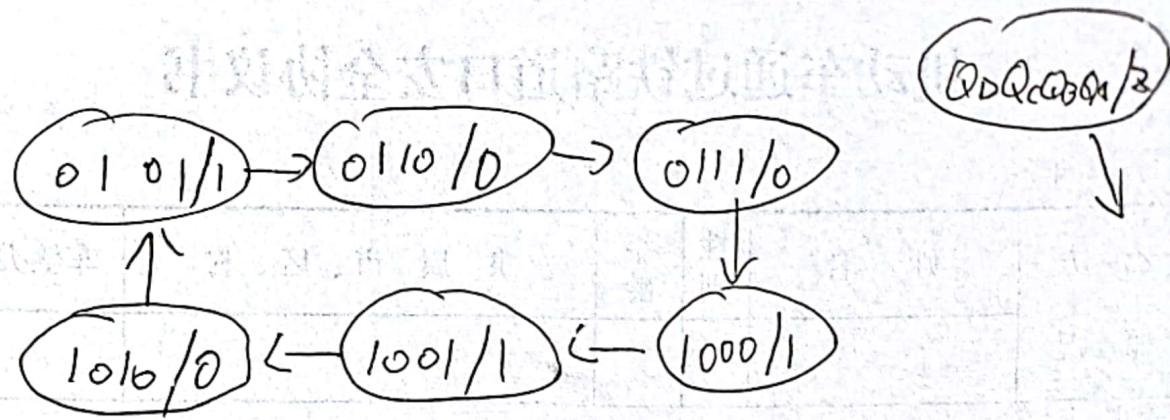
0-5

0 1 2 3 4 5 ✓



6

(2)



(3) 100 110

(4) 3↑,

7.

Q_2^{n+1}	Q_1^{n+1}	Q_0^{n+1}	00	01	11	10
0	0	0	0	0	0	0
0	0	1	0	0	0	0
1	0	1	0	0	0	0
1	1	0	0	0	0	0
0	1	1	0	0	0	0
1	1	1	0	0	0	0
0	1	1	0	0	0	0
1	1	0	0	0	0	0
1	0	0	0	0	0	0
0	0	0	0	0	0	0

Q_1^{n+1}	Q_0^{n+1}	00	01	11	10
0	0	0	0	0	0
0	0	1	1	1	1
1	0	1	1	1	1
1	1	1	1	1	1
0	1	1	1	1	1
1	1	1	1	1	1
0	1	1	1	1	1
1	1	1	1	1	1
0	0	0	0	0	0

Q_0^{n+1}	Q_1^{n+1}	Q_2^{n+1}	00	01	11	10
0	1	0	0	0	0	0
0	1	0	0	0	0	0
1	1	0	0	0	0	0
1	1	0	0	0	0	0
0	1	1	0	0	0	0
1	1	1	0	0	0	0
0	1	1	0	0	0	0
1	1	1	0	0	0	0
0	0	0	0	0	0	0

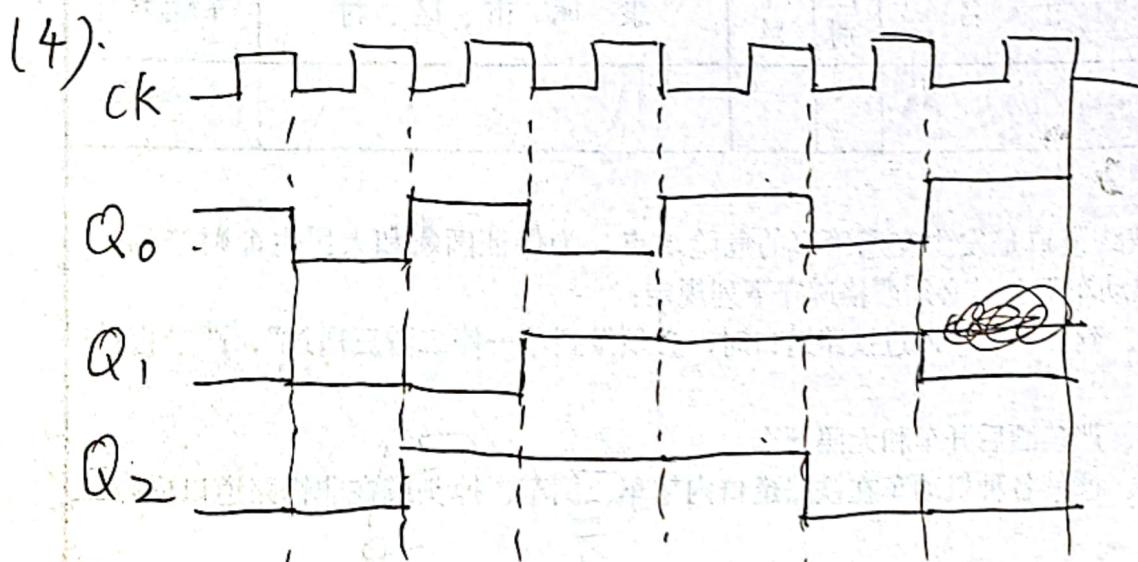
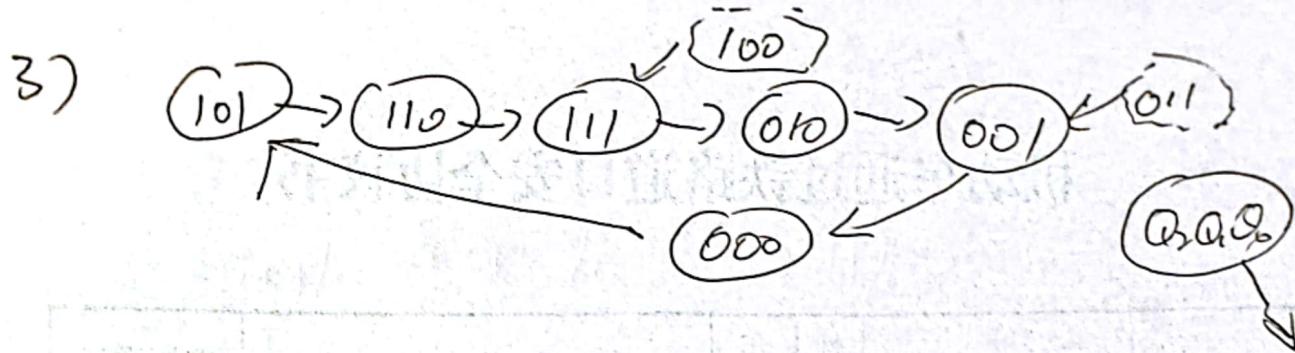
$$J_2 = \bar{Q}_1 \bar{Q}_0$$

$$\bar{K}_2 = \bar{Q}_1 + \bar{Q}_0$$

$$\Rightarrow k_2 = Q_1 Q_0$$

$$J_0 = 1$$

$$\bar{K}_0 = \bar{Q}_2 Q_1 \Rightarrow k_0 = Q_2 + \bar{Q}_1$$



001 000 101 110 111 010 001

5) $Q_0 = \text{二分频}$, $Q_1, Q_2 = \text{六分频}$

6. 思路：每次有满4个时钟的设置，再反向输出

可以用移位寄存器实现

设计方框图

