二、计算

1.(1) $Y_1 = ((A'B)' \cdot (AB')')'$

$= A'B + AB'$

$Y_2 = ((AB)')' = AB$

(2)

A	B	Y_1	Y_2
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

(3) Y_1 异或

Y_2 与

2.(1) $Y_1 = A(BC + B'C') + A'(B'C + BC')$

$= ABC + AB'C' + A'B'C + A'BC'$

$= \sum m(1, 2, 4, 7)$

$Y_2 = 0 \cdot B'C' + 1 \cdot BC + A'(B'C + BC')$

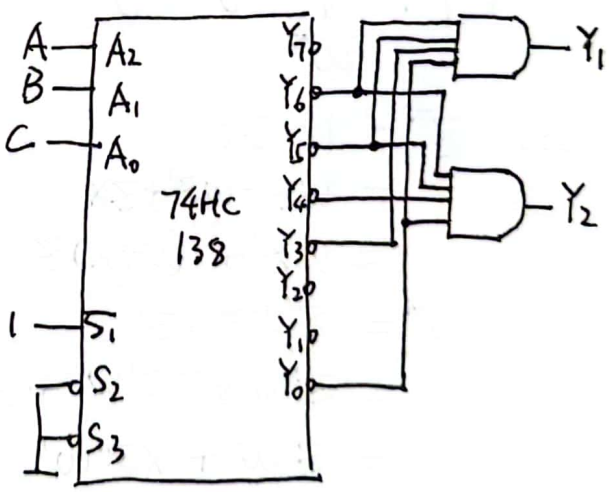
$= BC(A + A') + A'B'C + A'BC'$

$= \sum m(1, 2, 3, 7)$

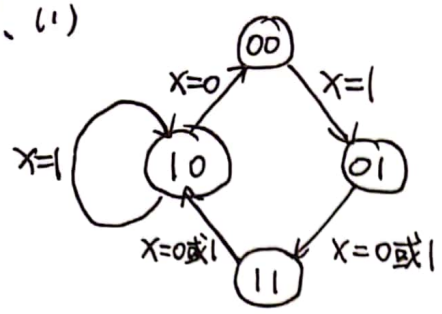
A	B	C	Y_1	Y_2
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1

(2) Y_1 → 全加器　Y_2 不知道

(3)



3、(1)



(2)

X \ ZW	00	01	11	10
0	00	11	10	00
1	01	11	10	10

$Z^* W^*$

X \ ZW	00	01	11	10
0	0	1	1	0
1	0	1	1	1

Z^*

$Z^* = W + ZX$

X \ ZW	00	01	11	10
0	0	1	0	0
1	1	1	0	0

W^*

$W^* = Z'W + XZ'$

(3) $Z^* = W + ZX$

$= WZ + WZ' + ZX$ $\Rightarrow J_2 = W \quad K_2 = (W+X)'$

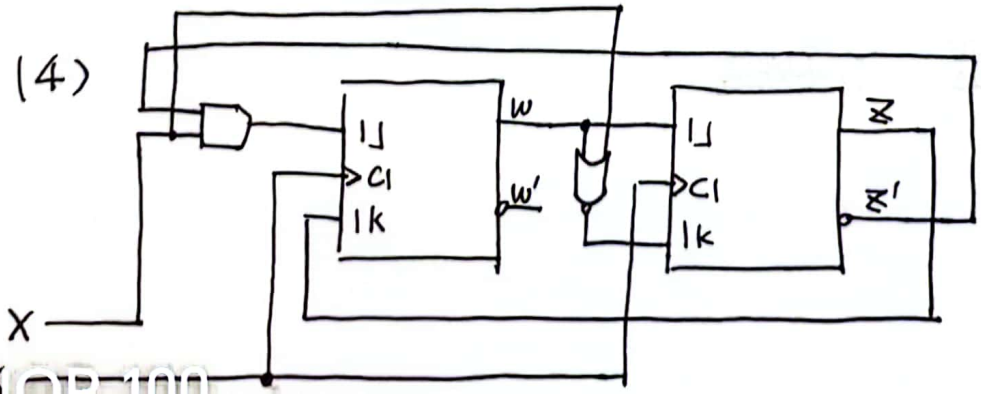
$= WZ' + (W+X)Z$

$W^* = Z'W + XZ'$

$= Z'W + XZ'W' + XZ'W \Rightarrow J_1 = XZ' \quad K_1 = Z$

$= Z'W + XZ'W'$

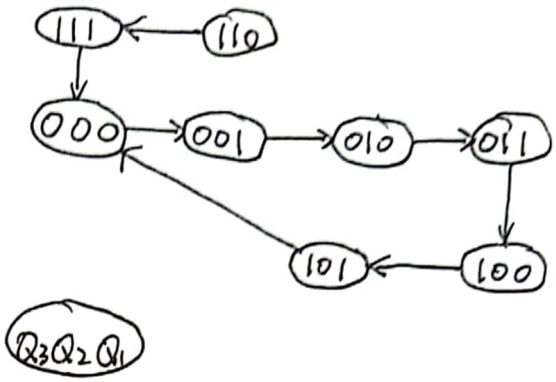
(4)



4. (1) $\begin{cases} J_1 = K_1 = 1 \\ J_2 = Q_1 \cdot Q_3' \quad K_2 = Q_1 \\ J_3 = Q_1 \cdot Q_2 \quad K_3 = Q_1 \end{cases} \Rightarrow \begin{cases} Q_1^* = Q_1' \\ Q_2^* = Q_1 Q_3' \cdot Q_2' + Q_1' Q_2 \\ Q_3^* = Q_1 Q_2 Q_3' + Q_1' Q_3 \end{cases}$

(2)

Q_3	Q_2	Q_1	Q_3^*	Q_2^*	Q_1^*
0	0	0	0	0	1
0	0	1	0	1	0
0	1	0	0	1	1
0	1	1	1	0	0
1	0	0	1	0	1
1	0	1	0	0	0
1	1	0	1	1	1
1	1	1	0	0	0



(3) $Y = (Q_2'Q_1' + Q_2Q_1') \cdot Q_3 + (Q_2'Q_1 + Q_2Q_1) \cdot Q_3'$

$= \sum m(1, 3, 4, 6)$

输出序列为：0 1 0 1 1 0

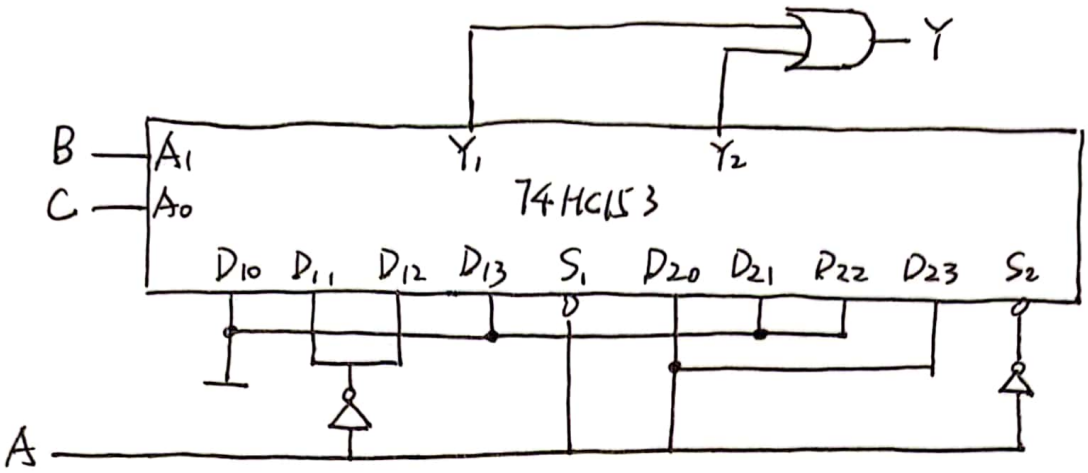
三、综合

1. (1)

A	B	C	Y
0	0	0	0
0	0	1	1
0	1	0	1
1	0	0	1
0	1	1	0
1	0	1	0
1	1	0	0
1	1	1	1

$Y = \sum m(1, 2, 4, 7)$

(2)

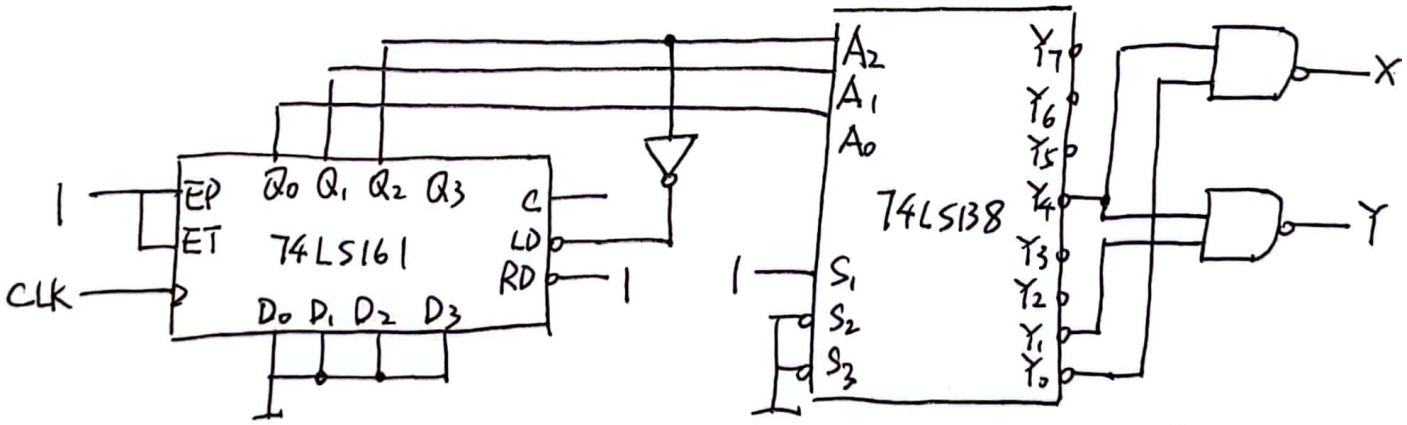


2.(1)

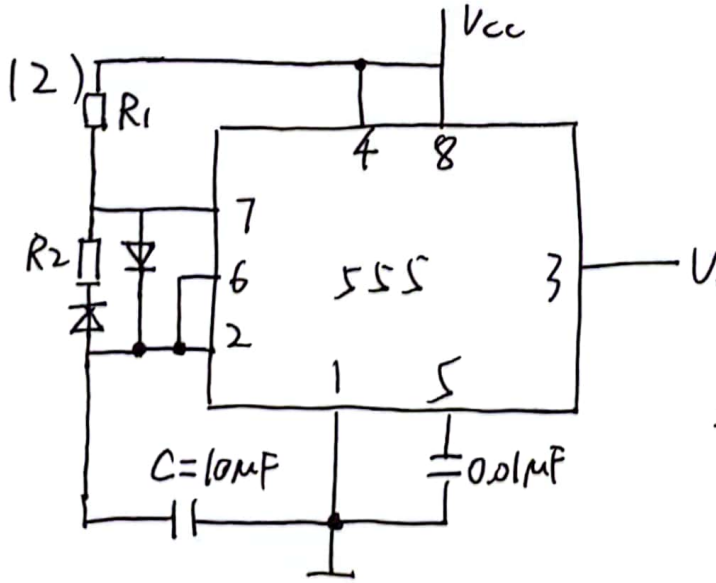
	CP	Q_3	Q_2	Q_1	Q_0	X	Y
	0	0	0	0	0	1	0
	1	0	0	0	1	0	1
五进制	2	0	0	1	0	0	0
	3	0	0	1	1	0	0
	4	0	1	0	0	1	1

$X=\sum m(0,4)$

$Y=\sum m(1,4)$



(2)



充电时间：$R_1C\ln\frac{V_{cc}-\frac{1}{3}V_{cc}}{V_{cc}-\frac{2}{3}V_{cc}}=R_1C\ln 2$

放电时间：$R_2C\ln\frac{0-\frac{2}{3}V_{cc}}{0-\frac{1}{3}V_{cc}}=R_2C\ln 2$

$$\begin{cases}(R_1+R_2)C\ln 2=1\,s\\ R_1C\ln 2=R_2C\ln 2\end{cases}$$

$$\Rightarrow\begin{cases}R_1=72.13k\Omega\\ R_2=72.13k\Omega\end{cases}$$