

23. 10. 11

1. 输入 $I_1 = I_3 = I_5 = 1$, 其余为 0 时:

$I_5 = 1$, 对应真值表 1. 3. 5. 6 排 第 3 排 $I_1 = 1 \neq 0$,

第 6 排 $I_4 = 1 \neq 0$. \therefore 只有 1. 5 排

\therefore 若 $E1$ 为 0 , 则 $Y_2 Y_1 Y_0 = 000$

若 $E1$ 为 1 , 则 $Y_2 Y_1 Y_0 = 101$

2. AB Y

00 C

01 \bar{C}

10 \bar{C}

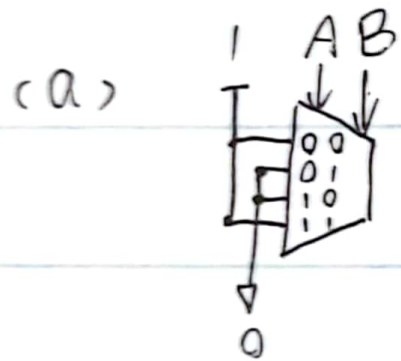
11 C

~~XXXXXXXXXX~~

$$Y = \begin{cases} C, & A \oplus B = 0 \\ \bar{C}, & A \oplus B = 1 \end{cases}$$

$$\Rightarrow Y = (A \oplus B) \bar{C} + (\overline{A \oplus B}) C$$

3. 四选 - 复用器



AB	Y
00	1
01	0
10	0
11	1

$$Y = \bar{A}\bar{B} + AB$$

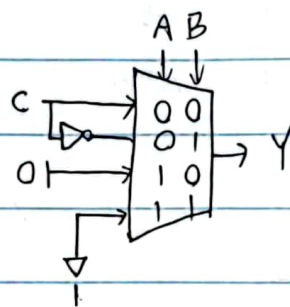
(b)

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

$\rightarrow Y = C$
 $\rightarrow Y = \bar{C}$
 $\rightarrow Y = 0$
 $\rightarrow Y = 1$

↓

AB	Y
00	C
01	\bar{C}
10	0
11	1



4. 74138译码器, if and only if $S_1 S_2 S_3 = 111$ 时才会有计算, 否则全1.

$A_2 A_1 A_0$	$\bar{Y}_1 \dots \bar{Y}_0$	$Y_1 \dots Y_0$
0 0 0	11111110	00000001
0 0 1	11111101	
0 1 0	11111011	
0 1 1	11110111	
1 0 0	11101111	
1 0 1	11011111	
1 1 0	10111111	
1 1 1	01111111	10000000

$A_{19} A_{18} A_{17} A_{16}$	$E_1 E_2 E_3$	$A_{19} A_{18} A_{17} A_{16}$	$E_1 E_2 E_3$
0 0 0 0	0 0	1 1 0 0	1 1 1
0 0 0 1		1 1 0 1	1 1 0
0 0 1 0		1 1 1 0	1 1 0
0 0 1 1		1 1 1 1	1 1 0
0 1 0 0			
0 1 0 1			
0 1 1 0			
0 1 1 1			
1 0 0 0			
1 0 0 1			
1 0 1 0			

发现：仅当 $A_{19} A_{18} A_{17} A_{16} = 1100$ 时： $E_1 E_2 E_3 = 111$ 才工作，

其余情况 \bar{Y} 全为 1，即 $Y_0 Y_1 Y_2 \dots Y_7 = 00000000$

即 $CS = 0$

先写逻辑：若 $(A_{19} A_{18} A_{17} A_{16} \neq 1100)$ $CS_0 = CS_5 = CS_7 = 0$

else :	A_{15}	A_{14}	A_{13}	'	A_2	A_1	A_0	'	Y_0	Y_5	Y_7	
	0	0	0		0	0	0		1	0	0	→
	0	0	1		0	0	1		0	0	0	
	0	1	0		0	1	0		0	0	0	
	0	1	1		0	1	1		0	0	0	
	1	0	0		1	0	0		0	0	0	
	1	0	1		1	0	1		0	1	0	→
	1	1	0		1	1	0		0	0	0	
	1	1	1		1	1	1		0	0	1	→

$$CS_0 = Y_0 = A_{19} A_{18} \bar{A}_{17} \bar{A}_{16} \bar{A}_{15} \bar{A}_{14} \bar{A}_{13}$$

$$CS_5 = Y_5 = A_{19} A_{18} \bar{A}_{17} \bar{A}_{16} A_{15} \bar{A}_{14} A_{13}$$

$$CS_7 = Y_7 = A_{19} A_{18} \bar{A}_{17} \bar{A}_{16} A_{15} A_{14} A_{13}$$