

课程名称: _____

学生姓名: _____

专 业: _____

学 号: _____

一	二	三	四	五	六	七	八	总分	阅卷人签名

1. $-1000111000, 10111110$

-239.6E

1070.574

$1010101101000, 011101000101$

2. 10111010

反码

11000101

补码

11000110

3. 1, 2

4. 高阻态

5. b

1. D 2. A 3. B 4. C 5. B

解: 1. $Y = (A \cdot B)'$

2. 按 $Y_1 = A \cdot \bar{B} \cdot \bar{C} + \bar{A} \cdot C + BC$

$Y_2 = (A+C)(\bar{B}+C)(\bar{A}+B+\bar{C})$

A	B	C	$A \cdot \bar{B} \cdot \bar{C}$	$\bar{A} \cdot C$	BC	$A+C$	$\bar{B}+C$	$\bar{A}+B+\bar{C}$	Y_1	Y_2
0	0	0	0	0	0	0	1	1	0	0
0	0	1	0	1	0	1	1	1	1	1
0	1	0	0	0	0	0	0	1	0	0
0	1	1	0	1	1	1	1	1	1	1
1	0	0	1	0	0	1	1	1	1	1
1	0	1	0	0	0	1	1	0	0	0
1	1	0	0	0	0	1	0	1	0	0
1	1	1	0	0	1	1	1	1	1	1

由真值表知: $Y_1 = Y_2$

$$A \cdot \bar{B} \cdot \bar{C} + \bar{A} \cdot C + BC = (A+C)(\bar{B}+C)(\bar{A}+B+\bar{C})$$

原等式成立



扫描全能王 创建

3.

AB \ CD	00	01	11	10	
00	0	1	0	1	$A'B'C'D'$
01	1	0	1	0	$A'B'CD$
11	0	1	0	1	$AB'C'D'$
10	1	0	1	0	$AB'CD$

$A'B'C'D'$
 $A'B'CD$
 $AB'C'D'$
 $AB'CD$

$A'B'C'D' + AB'CD$

$$\therefore f(A, B, C, D) = A'B'C'D' + A'B'CD' + A'B'CD + A'B'CD + AB'C'D' + AB'CD + AB'C'D' + AB'CD$$

$$= A'B'C'D' + AB'CD$$

4. $F(A, B, C, D) = A + \overline{BCD} + \overline{AD}$

$$= A + (BCD + (A'D)')'$$

$$= A + (BCD + A' + D')'$$

$$= A + (BCD)' \cdot A \cdot D$$

$$= A + (B' + C' + D') \cdot A \cdot D$$

$F(A, B, C, D)$ 的对偶函数

$$Y_D = A \cdot (B + C + D) \cdot (\overline{A + D})$$

反函数

$$Y' = (A + (BCD + (AD)'))'$$

$$= A' \cdot (BCD + (AD)')$$



四. 1. 解: $F = (A+B)(B+C)(A+C)$

$$= (AB+AC+B+BC)(A+C)$$

$$= AB + ABC + AC + \cancel{AB+BC} + \cancel{ABC+BC}$$

$$= AB + ABC + AC + BC$$

$$= ABC(1+C) + AC + BC$$

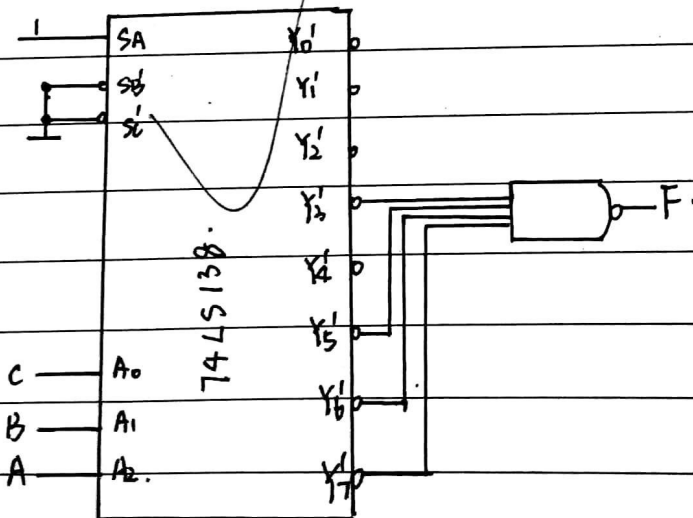
$$= AB + AC + BC$$

$$B'C'D' + AB'CD$$

$$F = ABC(C+C') + AC(B+B') + BC(A+A')$$

$$= ABC + ABC' + ABC' + A'BC = \sum m(3, 5, 6, 7)$$

A	B	C	F
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1



2. 解: 设输出为Y. 含去为0. 进位为1.

8421 BCD 码从高位到低位分别为 m_3, m_2, m_1, m_0 .

m_3	m_2	m_1	m_0	Y
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	X
1	0	1	1	X
1	1	0	0	X
1	1	0	1	X
1	1	1	0	X
1	1	1	1	X

$$\begin{aligned} \therefore Y = & m_3' m_2 m_1' m_0' + m_3' m_2 m_1 m_0' + m_3' m_2 m_1 m_0 \\ & + m_3 m_2' m_1' m_0' + m_3 m_2' m_1' m_0 \end{aligned}$$

$m_3 m_2 \backslash m_1 m_0$	00	01	11	10
00	0	0	0	0
01	0	1	1	1
11	X	X	X	X
10	1	1	X	X

$$\begin{aligned} \therefore Y = & m_3 + m_2 m_1 + m_2 m_0 \\ = & (m_3 + m_2 m_1 + m_2 m_0)' ' \\ = & (m_3' \cdot (m_2 m_1)' \cdot (m_2 m_0)')' \end{aligned}$$

