

# 数字电子技术第四次作业

31 列出真值表

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

(续)

1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

逻辑表达式为  $Y = \overline{A}BC + A\overline{B}C + ABC\overline{C} + \overline{A}\overline{B}\overline{C} = \overline{A \oplus B \oplus C}$

可以用于检测A.B.C中是否有奇数个'0'

32 解

$S_0$	$S_1$	$S_2$	$S_3$	Y
0	0	0	0	1
0	0	0	1	$A+B$
0	0	1	0	$\overline{A+B}$
0	0	1	1	B
0	1	0	0	$A+\overline{B}$
0	1	0	1	A
0	1	1	0	$\overline{A \oplus B}$
0	1	1	1	AB

(续表)

1	0	0	0	$\overline{A+B}$
1	0	0	1	$A \oplus B$
1	0	1	0	$\overline{A}$
1	0	1	1	$\overline{AB}$
1	1	0	0	$\overline{B}$
1	1	0	1	$A\overline{B}$
1	1	1	0	$\overline{AB}$
1	1	1	1	0

33 由电路可知  $Y_1 = A \oplus B \oplus C$

$$Y_2 = AB + (A \oplus B)C = AB + AC + BC$$

$Y_1$  代表A.B.C的求和结果, 或者判断A.B.C中是否有奇数个1

$Y_2$  代表A.B.C的求和是否产生溢出

35  $Y_1 = m_0 + m_2 + m_4 + m_6 = \overline{C}\overline{B}\overline{A} + \overline{C}B\overline{A} + C\overline{B}\overline{A} + CB\overline{A} = \overline{A}$

$$Y_2 = m_1 + m_3 + m_5 + m_7 = \overline{C}\overline{B}A + \overline{C}BA + C\overline{B}A + CBA = A$$

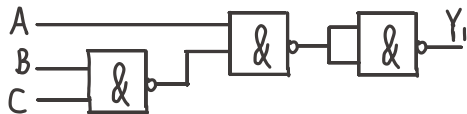
36

$$(1) Y_1 = A\bar{B} + A\bar{C}D + A\bar{C} = A\bar{B} + A\bar{C} \quad (2) Y_2 = A\bar{B} + \bar{A}C + B\bar{C} + AB\bar{D}$$

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

$$= \overline{\overline{A\bar{B}} \cdot \overline{\bar{A}C} \cdot \overline{B\bar{C}} \cdot \overline{AB\bar{D}}}$$

电路图

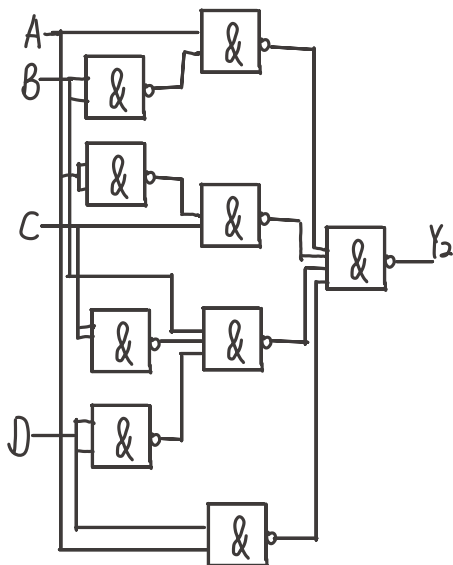
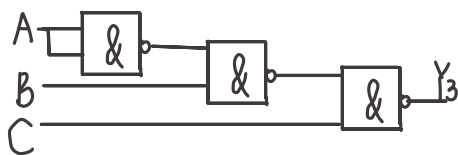


$$(3) Y_3(A,B,C) = \sum(m_0, m_2, m_3, m_4, m_6)$$

$$= \bar{C} + \bar{A}B$$

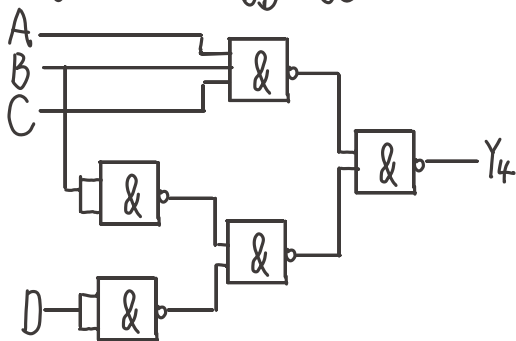
$$= \overline{\overline{\bar{C}} \cdot \overline{\bar{A}B}}$$

电路图



$$(4) Y_4(A,B,C,D) = \sum(m_0, m_2, m_8, m_{10}, m_{14}, m_{15})$$

$$= \bar{B}\bar{D} + ABC = \overline{\overline{\bar{B}\bar{D}} \cdot \overline{ABC}}$$



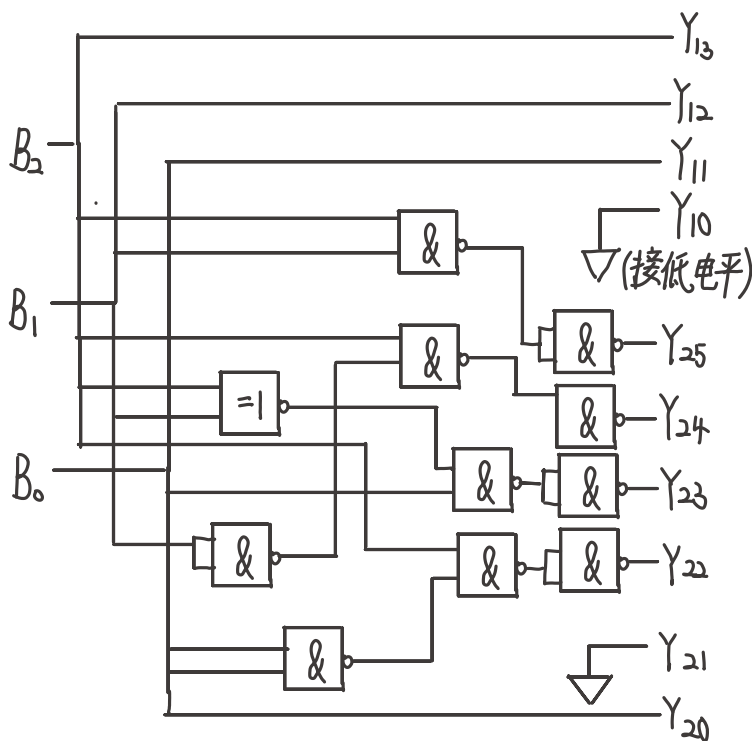
37 易得  $Y_1$  为4位2进制数,  $Y_2$  为6位2进制数

真值表

$B_2$	$B_1$	$B_0$	$Y_{13}$	$Y_{12}$	$Y_{11}$	$Y_{10}$	$Y_{25}$	$Y_{24}$	$Y_{23}$	$Y_{22}$	$Y_{21}$	$Y_{20}$
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	1	0	0	0	0	0	0	1
0	1	0	0	1	0	0	0	0	0	1	0	0
0	1	1	0	1	1	0	0	0	1	0	0	1
1	0	0	1	0	0	0	0	1	0	0	0	0
1	0	1	1	0	1	0	0	1	1	0	0	1
1	1	0	1	1	0	0	1	0	0	1	0	0
1	1	1	1	1	1	0	1	1	0	0	0	1

易得  $Y_{10}=0$   $Y_{11}=B_0$   $Y_{12}=B_1$   $Y_{13}=B_2$

$Y_{20}=B_0$   $Y_{21}=0$   $Y_{22}=\overline{B_2}B_1$   $Y_{23}=\overline{B_2}B_1B_0+B_2\overline{B_1}B_0$   $Y_{24}=B_2\overline{B_1}+B_2B_0$   $Y_{25}=B_2B_1$



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真值表

A	B	C	MN
0	0	0	00
0	0	1	11
0	1	0	11
0	1	1	010
1	0	0	100
1	0	1	000
1	1	0	000
1	1	1	11

电路图

