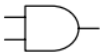
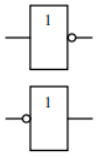
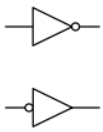
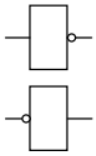
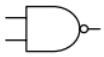
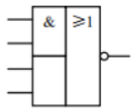
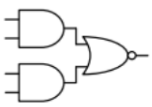
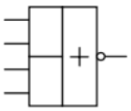
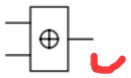
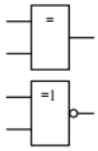
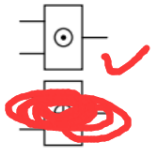
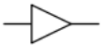
数字逻辑期末复习

表 C1　基本逻辑门电路图形符号

序号	名称	GB/T 4728.12-1996		国外流行图形符号	曾用图形符号
		限定符号	国标图形符号		
1	与门	&			
2	或门	≥1			
3	非门	 逻辑非入和出			
4	与非门				
5	或非门				
6	与或非门				
7	异或门	=1			
8	同或门	=			
9	集电极开路 OC 门、漏极开路 OD 门	 L 型开路输出			
10	缓冲器	▷			

1.逻辑代数的基本定律

名称	公式 1	公式 2
交换律	$A+B=B+A$	$AB=BA$
结合律	$A+(B+C)=(A+B)+C$	$A(BC)=(AB)C$
分配律	$A+BC=(A+B)(A+C)$	$A(B+C)=AB+AC$
互补律	$A+\bar{A}=1$	$A\bar{A}=0$
0-1 律	$A+0=A$	$A1=A$
	$A+1=1$	$A0=0$
对合律	$\bar{\bar{A}}=A$	$\bar{\bar{A}}=A$
重叠律	$A+A=A$	$AA=A$
吸收律	$A+AB=A$	$A(A+B)=A$
	$A+\bar{A}B=A+B$	$A(\bar{A}+B)=AB$
	$AB+A\bar{B}=A$	$(A+B)(A+\bar{B})=A$
	$AB+\bar{A}C+BC=AB+\bar{A}C$	$(A+B)(\bar{A}+C)(B+C)=(A+B)(\bar{A}+C)$
反演律	$\overline{A+B}=\bar{A}\bar{B}$	$\overline{AB}=\bar{A}+\bar{B}$

- 常用BCD码表

常用BCD码

十进制数	8421码	5421码	2421码	余3码	余3循环码
0	0000	0000	0000	0011	0010
1	0001	0001	0001	0100	0110
2	0010	0010	0010	0101	0111
3	0011	0011	0011	0110	0101
4	0100	0100	0100	0111	0100
5	0101	1000	1011	1000	1100
6	0110	1001	1100	1001	1101
7	0111	1010	1101	1010	1111
8	1000	1011	1110	1011	1110
9	1001	1100	1111	1100	1010

- 最小项：n个变量的逻辑乘,用m表示。
- 最大项：n个变量的逻辑加,用M表示。

十进制数	A	B	C	最小项	最大项
0	0	0	0	$m_0=\overline{A}\ \overline{B}\ \overline{C}$	$M_0=A+B+C$
1	0	0	1	$m_1=\overline{A}\ \overline{B}C$	$M_1=A+B+\overline{C}$
2	0	1	0	$m_2=\overline{A}B\overline{C}$	$M_2=A+\overline{B}+C$
3	0	1	1	$m_3=\overline{A}BC$	$M_3=A+\overline{B}+\overline{C}$
4	1	0	0	$m_4=A\ \overline{B}\ \overline{C}$	$M_4=\overline{A}+B+C$
5	1	0	1	$m_5=A\overline{B}C$	$M_5=\overline{A}+B+\overline{C}$
6	1	1	0	$m_6=AB\overline{C}$	$M_6=\overline{A}+\overline{B}+C$
7	1	1	1	$m_7=ABC$	$M_7=\overline{A}+\overline{B}+\overline{C}$