

12011923

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$$1. \text{解: } (54)_7 = 5 \times 7^1 + 4 \times 7^0 = (39)_{10} \quad (16)_7 = 1 \times 7^1 + 6 \times 7^0 = 7 + 6 = (13)_{10}$$

$$39 \times 13 = 507 \quad (507)_{10} = (1323)_7$$

$$\rightarrow X = 1323$$

$$2. \text{解: BCD 码中: } (1000|100|0101)_{8421} = (895)_{10}$$

$$\text{无符号二进制数: } (1000|100|0101)_2 = (1 \times 2^9 + 0 \times 2^8 + 1 \times 2^7 + 0 \times 2^6 + 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0)_{10} = 2197$$

补码中: 纯码 1000|100|0101, 反码: 1 000|001|0100, 原码: 1 111|011|0111

$$+ \text{进制数: } 1 \times 2^9 + 1 \times 2^8 + 0 \times 2^7 + 1 \times 2^6 + 0 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + (2^0 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0) = 1899$$

$$3. \text{解: A 原码: } 01010101 \quad \text{补码: } 01010101, + \text{进制值: } 85$$

$$B \text{ 原码: } 00001010 \quad \text{补码: } 00001010, + \text{进制值: } 10$$

~~补码运算:~~ 
$$\begin{array}{r} 01010101 \\ 0000 + 00001010 \\ \hline 10111111 \end{array}$$

~~补码运算:~~ 
$$\begin{array}{r} 01010101 \\ + 11110110 \\ \hline \text{溢出} \leftarrow 10101011 \end{array}$$

$$A - B \text{ 的补码: } 01001011$$

$$-B \text{ 原码: } 10001010 \quad \text{补码: } 11110110$$

$$\text{原码: } 01001011$$

$$+ \text{进制值: } 75$$

用 + 进制验证, A + 进制值: 85, B: + 进制值: 10, (A - B) + 进制值 75.

与补码运算结果一致

## 第二章 变换代数:

$$1. \text{解: } Y = BC' + ABC'E + B'(A'D + A'D') + B(A \oplus D) = BC' + ABC'E + B(A'D)(A'D') + ABD + ABD = BC' + ABC'E + AB'D + A'B'D + ABD + A'D = BC' + A'D + A'D = BC' + A \oplus D = BC' + A'D + A'D$$

$$\begin{aligned}
 & \text{解: } L(A, B, C, D) = [ABC + AB(C+B+C')] + (CD)' + C' = (ABC + ABC) + C' + CD + C' \\
 & = (A'BC)' + (ABC)' + C + D = (A+B+C')(A+B+C') + C + D \\
 & = ABCD + A'BCD + ABC'D + ABCD + ABC'D + ABC'D + ABC'D \\
 & + A'BCD + A'BCD + ABC'D + ABCD + ABC'D + ABC'D \\
 & = ABCD + AB'CD + ABC'D + A'BCD + ABCD + A'BCD + A'BCD + ABC'D \\
 & + ABC'D + ABC'D + A'BCD + ABCD + ABC'D + A'BCD + ABC'D \\
 & + ABCD + ABC'D + ABCD + ABCD + ABCD + ABCD + ABCD \\
 & = \sum m(0, 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14)
 \end{aligned}$$

~~CD~~

AB	00	01	11	10
00	1	1	1	1
01	1	1		1
11	1	1	1	1
10	1	1	1	1

$$Y = BCD + C'D + CD$$

$$= B + C + D'$$

### 第三章 门电路

解当驱动管输出为高电平时 驱动管为低电平时

$$V_{OC} - R_{L(\min)}(nI_{OH} + mI_{IH})$$

$$V_{OC} - R_{L(\min)}(I_{OL} - m(I_{IH})) \leq V_{OC(\max)}$$

$$\geq V_{OH(\min)}$$

$$\rightarrow R_{L(\max)} = \frac{V_{OC} - V_{OH(\min)}}{nI_{OH} + mI_{IH}}$$

$$\rightarrow R_{L(\min)} = \frac{V_{OC} - V_{OH(\max)}}{I_{OL} - m(I_{IH})}$$

$$= \frac{5 - 0.2}{16 \times 10^3 - 3 \times 1.6 \times 10^3}$$

$$\approx 0.43 \text{ k}\Omega$$

$$\approx 1.41 \text{ k}\Omega$$

$$R_L \in [0.43 \text{ k}\Omega, 1.41 \text{ k}\Omega]$$