

$$1.2.(4) \quad (67.24)_8 = 6 \times 8^1 + 7 \times 8^0 + 2 \times 8^{-1} + 4 \times 8^{-2} \\ = 55.31$$

$$(15) \quad (2014.8)_9 = 4 \times 9^0 + 1 \times 9^1 + 0 \times 9^2 + 2 \times 9^3 + 8 \times 9^{-1} \\ = 1471.9$$

$$(16) \quad (15C.38)_{16} = 12 \times 16^0 + 5 \times 16^1 + 1 \times 16^2 + 3 \times 16^{-1} \\ + 8 \times 16^{-2} \\ = 348.219$$

1.3(3)	8   2014		$0.8 \times 8 = 6.4$	6
	8   251	6	$0.4 \times 8 = 3.2$	3
	8   31	3	$0.2 \times 8 = 1.6$	1
	8   73	7	$0.6 \times 8 = 4.8$	4
	8   0	3	$0.8 \times 8 = 6.4$	

$$(3736.6314)_{10}$$

2   2014	0	2   15	$0.8 \times 2 = 1.6$	1
2   1007	1	2   7	$0.6 \times 2 = 1.2$	1
2   503	1	2   3	$0.2 \times 2 = 0.4$	0
2   251	1	2   1	$0.4 \times 2 = 0.8$	0
2   126	1	0	$0.8 \times 2 = 1.6$	1
2   63	0			
2   31	1			
2   15	1			

$$(1111110110.11)_2$$



$$16 \overline{) 2014} \quad 14 \quad E$$

$$0.8 \times 16 = 12.8 \quad 12$$

$$0.8 \times 16 = 12.8 \quad 12$$

$$16 \overline{) 7} \quad 13 \quad D$$

$$(7DE.C)_H$$

$$7.5_{10} = (110111)_2 + (11011)_2 = (11100)_2$$

$$\begin{array}{r} 110111 \\ - 11011 \\ \hline 11100 \end{array}$$

$$(5) \quad (A385)_H + (5241)_H = (F5C6)_H$$

$$A385$$

$$5241$$

$$F5C6$$

1.7

$$\text{原码} \quad 01111 \quad 11111 \quad 00000 \quad 10000$$

$$01010 \quad 11010$$

$$\text{反码} \quad 01111 \quad 10000 \quad 00000 \quad 11111$$

$$01010 \quad 10101$$

$$\text{补码} \quad 01111 \quad 10001 \quad 00000 \quad 00000$$

$$01010 \quad 11011$$



1-10 11)  $\frac{11}{64}$

$$\frac{11}{64} \times 2 = \frac{11}{32} \quad 0$$

0.001011

$$\frac{11}{32} \times 2 = \frac{11}{16} \quad 0$$

$$\frac{11}{16} \times 2 = \frac{11}{8} = 1 + \frac{3}{8} \quad 1$$

$$\frac{3}{8} \times 2 = \frac{3}{4} \quad 0$$

$$\frac{3}{4} \times 2 = \frac{3}{2} = 1 + \frac{1}{2} \quad 1$$

$$\frac{1}{2} \times 2 = 1 \quad 1$$

原码 000101100 , 补码: 000101100

补码 000101100

(3)  $\frac{15}{256}$   $\frac{15}{256} \times 2 = \frac{15}{128} \quad 0$  0.00001111

$$\frac{15}{128} \times 2 = \frac{15}{64} \quad 0$$

$$\frac{15}{64} \times 2 = \frac{15}{32} \quad 0$$

$$\frac{15}{32} \times 2 = \frac{15}{16} \quad 0$$

$$\frac{15}{16} \times 2 = \frac{15}{8} = 1 + \frac{7}{8} \quad 1$$

$$\frac{7}{8} \times 2 = \frac{7}{4} = 1 + \frac{3}{4} \quad 1$$

$$\frac{3}{4} \times 2 = \frac{3}{2} = 1 + \frac{1}{2} \quad 1$$

$$\frac{1}{2} \times 2 = 1 \quad 1$$

原码 000001111

补码 000001111

补码 000001111





$$16) - \frac{15}{256}$$

$$- 0.0001111$$

原码:

100001111

反码:

11110000

补码:

11110001

1.12

(1010111.01110101)<sub>BCD</sub>

(57.75)<sub>10</sub>

(10001010.10101)<sub>余3码</sub>

(10111101.110101)<sub>2421</sub>

(01110100.01000111)<sub>典型 Gray</sub>

(~~100~~111001.11)<sub>2</sub>

$$2 \overline{) 57}$$

$$0.75 \times 2 = 1.5 \quad 1$$

$$2 \overline{) 28} \quad 1$$

$$0.5 \times 2 = 1 \quad 1$$

$$2 \overline{) 14} \quad 0$$

$$2 \overline{) 7} \quad 0$$

$$2 \overline{) 3} \quad 1$$

$$2 \overline{) 1} \quad 1$$

n



1.13. (1) 奇校验: 1010101, 11111100  
(2) 偶校验: 1010100, 11111101

1.17. (1) 反函数

$$F = AB + (\bar{A} + B)(C + D + E)$$

$$\bar{F} = \overline{AB + (\bar{A} + B)(C + D + E)}$$

$$= \overline{AB} \cdot \overline{(\bar{A} + B)(C + D + E)}$$

$$= (\bar{A} + \bar{B}) \cdot \left( \overline{(\bar{A} + B)} + \overline{C + D + E} \right)$$

$$= (\bar{A} + \bar{B}) \cdot \left( (A \cdot B) + (\bar{C} \cdot \bar{D} \cdot \bar{E}) \right)$$

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

12)  $F = (A + B\bar{C})(\bar{A} + \bar{D}E)$

$$\bar{F} = \overline{(A + B\bar{C})(\bar{A} + \bar{D}E)}$$

$$= \left( \overline{A + B\bar{C}} \right) + \overline{(\bar{A} + \bar{D}E)}$$

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

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

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





$$(3) F = A \oplus B \oplus 1$$

$$\overline{F} = \overline{A \oplus B \oplus 1}$$

$$= \overline{A} \odot B \odot 0 = \overline{A} \odot B$$

对偶法,

$$(1) F = AB + (\overline{A} + B)(C + D + E)$$

$$F' = (A + B) \cdot ((\overline{A} + B)(C + D + E))'$$

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

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

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

(2)

$$F = (A + B\overline{C})(\overline{A} + \overline{D}E)$$

$$F' = ((A + B\overline{C})(\overline{A} + \overline{D}E))'$$

$$= ((A + B\overline{C})' + (\overline{A} + \overline{D}E)')$$

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

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



$$(3) \quad F = \overline{A} \oplus \overline{B} \oplus 1 = \overline{A}$$

$$F' = \overline{F} = A \oplus B \oplus 1$$

$$= A \oplus B \oplus 0$$

$$= A \oplus B$$

$$1.18 \quad (A+B)(B+C)(C+A)$$

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

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

$$= AC + BC + AB$$

1.20. 最小项标准式.

$$11) \quad F = \overline{(AB + ABD)}(B + CD)$$

$$= \overline{AB} \cdot \overline{ABD} \cdot (B + CD)$$

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

$$= \overline{AB}(\overline{B} + CD)$$

$$= (\overline{A} + \overline{B})(\overline{B} + CD)$$

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

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

$$+ (A + \overline{A}) \overline{B} CD$$

$$= \overline{A} \cdot \overline{B} \cdot CD + \overline{A} \cdot \overline{B} \cdot C \overline{D} + \overline{A} B \overline{C} D + \overline{A} B C \overline{D} \\ + \overline{A} \overline{B} C D + A \overline{B} C D$$

$$= \sum m^4(3, 4, 5, 6, 7, 11)$$

$$= \pi M^4(0, 1, 2, 8, 9, 10, 12, 13, 14, 15)$$





$$(2) F = (\bar{A} + C)(A + B)(C + \bar{D})$$

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

$$(\bar{A} + C + \bar{D})(\bar{A} + C + D)$$

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

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

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

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

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

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

$$= \pi M^4(0, 1, 2, 3, 5, 8, 9, 12, 13)$$

$$= \sum m^4(4, 6, 7, 10, 11, 14, 15)$$

(3)

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

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

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

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

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

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

$$+ B\bar{B} \cdot C \cdot D + \bar{B}\bar{C} \cdot C \cdot D + \bar{B}C\bar{B} + B\bar{C} \cdot \bar{D}$$

$$= \bar{A}\bar{B} \cdot C(\bar{D} + D) + \bar{A}\bar{B} \cdot \bar{C}(\bar{D} + D) + ABC(\bar{D} + D) + AB\bar{C}(\bar{D} + D)$$

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





$$= \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}CD + \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}D \\ + ABC\bar{D} + ABCD + AB\bar{C}\bar{D} + AB\bar{C}D + A\bar{B}C\bar{D} \\ + A\bar{B}C\bar{D} + AB\bar{C}\bar{D} + \bar{A}B\bar{C}\bar{D}$$

$$= \sum m^4 (0, 1, 2, 4, 7, 9, 10, 12, 13, 14, 15)$$

$$= \prod M^4 (5, 6, 8, 11)$$

1. 22. 14

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

$$F = \bar{A}B + BC + \bar{B}\bar{C}\bar{D}$$

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

(2)


				A
	0	1	1	0
	0	0	1	0
				B

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

(3)

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

$$F = B\bar{C}\bar{D} + \bar{A}\bar{C}D \\ + BCD + ABC$$

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



(4)

		A		
	1	d	d	1
	0	1	0	0
C	1	0	0	1
	d	1	1	1
		B		

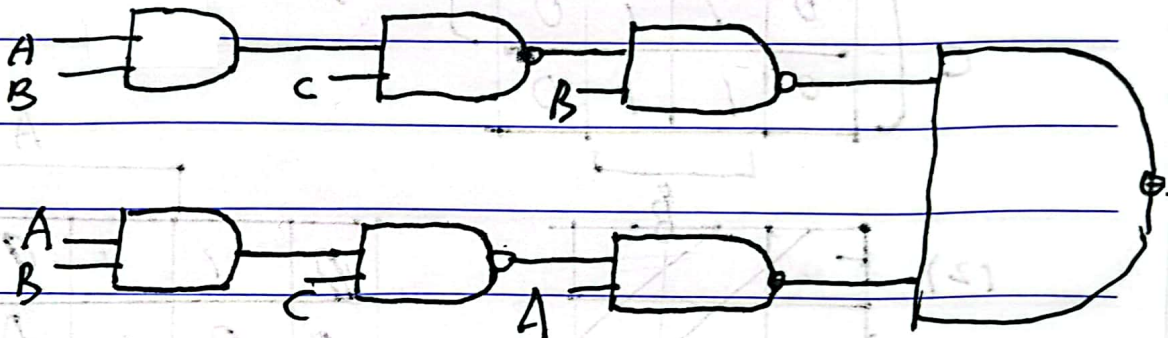
D

$$F = \bar{D} + \bar{B} \cdot C + \bar{A} B \cdot \bar{C}$$

$$F = (B + C + \bar{D})(\bar{B} + \bar{C} + \bar{D})$$

$$(\bar{A} + C + \bar{D})$$

1.23. (2)  $F = \overline{(A \cdot \bar{A} B C)} \cdot \overline{(B \cdot \bar{A} B C)}$



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

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

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

