

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

$\backslash AB$	00	01	11	10
C				
0		1	1	1
1				

$\therefore Y = \bar{B}C + AC$

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

$\backslash AB$	00	01	11	10
C				
0	1			
1	1		1	1

$\therefore Y = \bar{A}\bar{B} + AC$

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

$\backslash AB$	00	01	11	10
C				
0	1			1
1	1			
1				1
1				
1	1	1		1

\therefore 原式已为最简与或式

(4) $Y = \bar{A}\bar{B}CD + \bar{A}BCD + \bar{A}\bar{B}D + BCD + \bar{A}\bar{B}\bar{C}$

$\backslash AB$	00	01	11	10
C				
0				
0		1		
1	1	1	1	1
1	1	1	1	1
1				

$\therefore Y = \bar{A}D + \bar{A}\bar{B}\bar{C} + BCD$

1.24 (1) $Y(ABC) = \sum(m_0, m_1, m_2, m_5, m_6, m_7)$

$\backslash AB$	00	01	11	10
C				
0	1	1	1	
1	1		1	1

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

$5 + 1 + 4 + 1$

(2) $Y(A,B,C) = \sum(m_1, m_3, m_6, m_7)$

$\backslash AB$	00	01	11	10
C				
0				
1	1	1	1	1

$Y = C$

(3) $Y(A,B,C,D) = \sum(m_0 \sim m_4, m_6, m_8 \sim m_{11}, m_{14})$

$\backslash AB$	00	01	11	10
C				
0	1	1		1
1	1	1		1
3	1	1		1
2	1	1		1

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

\bar{D}

(4) $Y(A,B,C,D) = \sum(m_0 \sim m_5, m_6, m_8 \sim m_{10}, m_{12}, m_{14})$

$\backslash AB$	00	01	11	10
C				
0	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1

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

$$\begin{aligned}
 (1) Y &= A\bar{B} + \bar{A}C + \bar{C}\bar{D} + D \\
 &= A\bar{B} + \bar{A}C + \bar{C} + D \\
 &= A\bar{B} + \bar{A} + \bar{C} + D \\
 &= \bar{A} + \bar{B} + \bar{C} + D
 \end{aligned}$$

$$\begin{aligned}
 (2) Y &= (\bar{A} + \bar{B})D + (\bar{A}\bar{B} + BD)\bar{C} + \bar{A}\bar{C}BD + \bar{D} \\
 &= AB + \bar{D} + \bar{A}\bar{B}\bar{C} + B\bar{C}D + \bar{A}\bar{C}BD \\
 &= AB + \bar{D} + \bar{A}\bar{B}\bar{C} + B\bar{C}D \\
 &= AB + \bar{D} + \bar{A}\bar{B}\bar{C} + B\bar{C} \\
 &= AB + \bar{D} + \bar{A}\bar{C} + B\bar{C} \\
 &= AB + \bar{D} + \bar{A}\bar{C}
 \end{aligned}$$

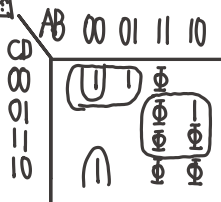
$$(3) Y = A\bar{B}D + \bar{A}\bar{B}\bar{C}D + \bar{B}CD + \overline{A\bar{B} + C}(B + D)$$

$$\begin{aligned}
 &= A\bar{B}D + \bar{A}\bar{B}\bar{C}D + \bar{B}CD + (\bar{A} + \bar{B})\bar{C}(B + D) \\
 &= A\bar{B}D + \bar{A}\bar{B}\bar{C}D + \bar{B}CD + \bar{A}\bar{B}\bar{C} + \bar{A}\bar{C}D + B\bar{C} + \bar{C}D \\
 &= A\bar{B}D + \bar{A}\bar{B}\bar{C}D + \bar{B}CD + B\bar{C} + \bar{C}D \\
 &= (\bar{A} + C)\bar{B}D + \bar{A}\bar{C}\bar{B}D + B\bar{C} + \bar{C}D \\
 &= \bar{B}D + B\bar{C} + \bar{C}D = \bar{B}D + B\bar{C}
 \end{aligned}$$

$$\begin{aligned}
 (4) Y &= \overline{A\bar{B}\bar{C}D + A\bar{C}DE + \bar{B}DE + A\bar{C}DE} \\
 &= (\bar{A} + B + C + D)(\bar{A} + C + \bar{D} + E)(B + \bar{D} + E)(\bar{A} + C + D + E) \\
 &= \bar{A}\bar{D} + \bar{A}E + C\bar{D} + CE + \bar{D}E + BD\bar{E}
 \end{aligned}$$

$$\begin{aligned}
 (1) Y &= \overline{A + C + D} + \bar{A}\bar{B}\bar{C}\bar{D} + A\bar{B}\bar{C}D \text{ 约束条件} \\
 &= \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + \bar{A}B\bar{C}\bar{D} + \bar{A}B\bar{C}D + A\bar{B}\bar{C}\bar{D} + A\bar{B}C\bar{D} + A\bar{B}\bar{C}D + ABC\bar{D} = 0 \\
 Y &= \bar{A}\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}\bar{D} + A\bar{B}\bar{C}D
 \end{aligned}$$

卡诺图



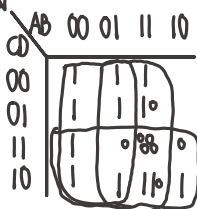
$$Y = AD + \bar{A}\bar{B}\bar{D} + \bar{A}\bar{C}\bar{D}$$

$$\begin{aligned}
 (3) Y &= (\bar{A}\bar{B} + B)\bar{C}\bar{D} + \overline{(A + B)(\bar{B} + C)} \\
 &= A\bar{C}\bar{D} + B\bar{C}\bar{D} + \bar{A}\bar{B} + B\bar{C}
 \end{aligned}$$

约束条件

$$ABC + ABD + ACD + BCD = 0$$

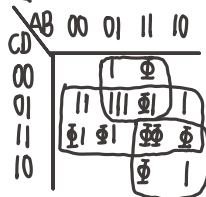
卡诺图



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

$$\begin{aligned}
 (2) Y &= C\bar{D}(A \oplus B) + \bar{A}\bar{B}\bar{C} + \bar{A}\bar{C}\bar{D} \\
 &= \bar{A}B\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C} + \bar{A}\bar{C}\bar{D} \\
 \text{约束条件 } &AB + CD = 0
 \end{aligned}$$

卡诺图

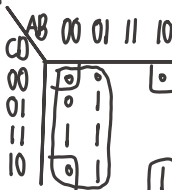


$$Y = B + \bar{A}D + AC$$

$$(4) Y(A, B, C, D) = \sum(m_3, m_5, m_6, m_7, m_9)$$

$$\text{约束条件 } m_1 + m_6 + m_8 + m_9 + m_{10} = 0$$

卡诺图



$$Y = \bar{A} + \bar{B}\bar{D}$$

$$(5) Y(A,B,C) = \sum (m_0, m_1, m_2, m_4)$$

约束条件 $m_3 + m_5 + m_6 + m_7 = 0$

易得 $Y=1$

$$(6) Y(A,B,C,D) = \sum (m_2, m_3, m_7, m_8, m_{11}, m_{14})$$

约束条件 $m_0 + m_5 + m_{10} + m_{15} = 0$

卡诺图

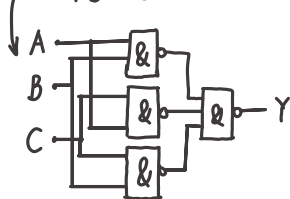
CD \ AB	00 01 11 10			
	00	01	11	10
0	0	0	1	1
1	0	0	0	0
3	1	1	1	1
2	1	1	1	1

$$Y = CD + AC + \bar{B}\bar{D}$$

1 24.

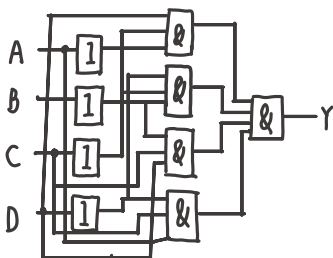
$$(1) Y = AB + BC + AC$$

$$= \overline{\overline{AB} \overline{CD} \overline{AC}}$$



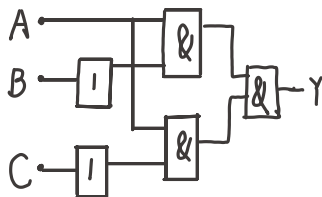
$$(2) Y(A,B,C,D) = \sum (m_0, m_1, m_3, m_5, m_6, m_{10}, m_{11}, m_{14})$$

$$= \overline{\overline{BCD} \overline{ACD} \overline{BCD} \overline{ACD}}$$



$$(3) Y = \overline{ABC} + \overline{AB} + \overline{AB} + \overline{BC}$$

$$= \overline{\overline{AB} \overline{AC}}$$



$$(4) Y(A,B,C,D) = \sum (m_0, m_1, m_2, m_6, m_7, m_8, m_9, m_{10}, m_{14}, m_{15})$$

$$= \overline{\overline{BC} \overline{BD} \overline{BC}}$$

