

HW3. 논리회로.

#1.  $f(A, B, C) = \sum m(1, 2, 3, 5, 6)$

(a)

A	B	C	f	
0	0	0	0	$m_0$
0	0	1	1	$m_1$
0	1	0	1	$m_2$
0	1	1	1	$m_3$
1	0	0	0	$m_4$
1	0	1	1	$m_5$
1	1	0	1	$m_6$
1	1	1	0	$m_7$

$$f(A, B, C) = m_1 + m_2 + m_3 + m_5 + m_6$$

(A)

$\begin{array}{c} AB \\ \diagdown \\ C \end{array}$	00	01	11	10
0	0	1	1	0
1	1	1	0	1

(c)

$$f(A, B, C) = \sum m(1, 2, 3, 5, 6)$$

$$= \overline{A}\overline{B}C + \overline{A}B\overline{C} + \overline{A}BC \\ + A\overline{B}C + ABC\overline{C}$$

#3.

(a)  $f(a, b, c, d)$

$$= ac + abd' + b'cd + cd + abcd'$$

$\begin{array}{c} ab \\ \hline cd \end{array}$	00	01	11	10
00	0	0	1	0
01	1	0	1	1
11	1	1	1	1
10	1	1	1	0

$abcd'$   
 $b'cd$   
 $cd$   
 $ac$   
 $abd'$

#4.

(b)  $f(a,b,c,d)$

$$= \sum m(0, 2, 4, 5, 10, 12, 14, 15)$$

$$+ \sum d(7, 8)$$

$\begin{array}{c} ab \\ \swarrow \searrow \\ cd \end{array}$	00	01	11	10
00	1	1	1	<del>1</del>
01	0	1	0	0
11	0	<del>1</del>	1	0
10	1	0	1	1

$$f = c'd' + b'd' + abd + abc$$

↑ Minimum SOP

1c)

$$f(a,b,c) = \sum m(0,1,3,6,7)$$

$\begin{array}{c} ab \\ \hline c \end{array}$	00	01	11	10
0	1	0	1	0
1	1	1	1	0

$$f = a'b' + bc + ab$$

#5.

$$f = (x, y + w) \cdot z + (x + y) \cdot w$$

