

1)

A

	B, C			
	00	01	11	10
0	L	0	L	L
1	L	L	L	0

$$S_1 = \bar{B}\bar{C} + AC + \bar{A}B$$

A

	B, C			
	00	01	11	10
0	L	L	0	L
1	L	L	0	L

$$S_2 = \bar{B} + \bar{C}$$

A

	B, C			
	00	01	11	10
0	0	L	0	0
1	L	L	0	L

$$S_3 = \bar{B}C + A\bar{C}$$

2)

A, B

	C, D			
	00	01	11	10
00	L	L	0	L
01	L	0	L	L
11	0	L	0	L
10	L	L	L	L

$$S_1 = C\bar{D} + A\bar{B} + \bar{B}\bar{C} + \bar{A}\bar{D} + A\bar{C}D + \bar{A}BC$$

A, B

	C, D			
	00	01	11	10
00	X	X	0	L
01	X	L	L	0
11	0	L	X	L
10	L	0	L	X

$$S_2 = BD + AC + \bar{B}\bar{D}$$

A, B

	C, D			
	00	01	11	10
00	0	0	L	0
01	X	X	0	L
11	L	0	L	X
10	X	L	0	0

$$S_3 = B\bar{D} + A\bar{B}\bar{C} + ABC + \bar{A}\bar{B}CD$$

3)

$$a) S = \bar{A}BC\bar{D} + \bar{A}BCD + \bar{A}\bar{B}C\bar{D} + A\bar{B}C\bar{D} + A\bar{B}CD + ABCD + A\bar{B}C\bar{D}$$

L1D

	00	01	11	10
00	L	0	1	0
01	0	0	0	1
11	0	1	1	0
10	L	L	0	0

A, B

$$S = ABD + A\bar{B}\bar{C} + \bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}CD + \bar{A}BC\bar{D}$$

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

L1D

	00	01	11	10
00	L	L	L	L
01	L	L	L	L
11	0	0	0	0
10	L	L	L	L

A, B

$$S = \bar{A} + \bar{B}$$

$$C) S(A, B, C) = \text{SUM}(m_1, m_3, m_4, m_5, m_7)$$

A	B	C	S
0	0	0	0
0	0	1	1 $\rightarrow m_1$
0	1	0	0
0	1	1	1 $\rightarrow m_3$
1	0	0	1 $\rightarrow m_4$
1	0	1	1 $\rightarrow m_5$
1	1	0	0
1	1	1	1 $\rightarrow m_7$

A

	BC			
	00	01	11	10
0	0	1	1	0
1	1	1	1	0

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