

Dan Ports

(10)

6. III PSI

1. 1. a

2. 0

3. 1

4. a

5. a

6. $a + b\bar{a}$

7. ab

8. b

9. $\bar{a} + \bar{a}b + b\bar{a} + b\bar{b} = \bar{a}$

10. a

11. a + b

12. $a + b + \bar{a}\bar{b} = 1$

13. $a + b + \overline{(ab)} = a + b + \bar{a} + \bar{b} = 1$

14. y

15. x

16. \bar{x}

17. y

18. x

19. w

20. x

21. x

22. 0

23. w

24. w

25. $xz + \bar{x}y$

26. $(x+z)(\bar{x}+y)$

27. $\bar{x} + \bar{y} + \bar{z}$

Z	1	A	B	C	D	
0	0	0	0	0	1	
0	0	0	0	1	1	
0	0	0	1	0	1	
0	0	0	1	1	1	
0	1	0	0	0	1	
0	1	0	0	1	1	
0	1	0	1	0	1	
0	1	0	1	1	1	
1	0	0	0	0	0	
1	0	0	0	1	0	
1	0	0	1	0	0	
1	0	0	1	1	0	
1	1	0	0	0	0	
1	1	0	0	1	0	
1	1	0	1	0	1	
1	1	0	1	1	1	

AB	CD	00	01	11	10
00		1	1	0	0
01		1	1	0	0
11		1	1	1	0
10		1	1	1	0

MSP: $\bar{a} + bc$

AB	CD	00	01	11	10
00		1	1	0	0
01		1	1	0	0
11		1	1	1	0
10		1	1	1	0

MPS = $\bar{a}\bar{b} + \bar{a}c$
 $= (\bar{a} + b)(\bar{a} + c)$

2

A B C D R

0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	0

AB	00	01	11	10
CD	00	01	11	10
00	1	1	1	1
01	0	1	1	0
11	0	0	0	0
10	0	0	1	1

MSP: $\bar{c}\bar{d} + b\bar{a} + a\bar{d}$

AB	00	01	11	10
CD	00	01	11	10
00	1	1	1	1
01	0	1	1	0
11	0	0	0	0
10	0	0	1	1

MPS: $cd + c\bar{a} + \bar{b}d$
 $= (\bar{c} + \bar{d})(\bar{c} + a)(b + d)$

3.

w	x	y	z	f
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1

wx	00	01	11	10
yz	00	1	1	1
01	0	1	1	1
11	0	0	1	1
10	0	0	0	0

$$\text{MSP: } \bar{y}\bar{z} + \bar{y}x + wz$$

wx	00	01	11	10
yz	00	1	1	1
01	0	1	1	1
11	0	0	1	1
10	0	0	0	0

$$\text{MPS: } \bar{y}\bar{z} + y\bar{w} + z\bar{w}x$$

$$= (\bar{y} + z)(\bar{y} + w) \cdot (\bar{z} + wx)$$

3. 1.

MSP

cd \ ab	00	01	11	10
00	0	1	X	0
01	0	0	1	0
11	0	0	1	0
00	0	1	1	1

MPS

cd \ ab	00	01	11	10
00	0	1	X	0
01	1	0	0	1
11	0	0	1	0
00	0	0	1	1

1. MSP: $ab + b\bar{d} + a\bar{c}d$

2. MPS: $(\bar{a} + b)(a + b)(b + c)(a + \bar{d})$

3. Yes, these are unique

4. $MPS = MSP$, the X is always 1.

2.

cd \ ab	00	01	11	10
00	1	1	0	1
01	X	0	0	X
11	0	0	0	0
00	0	0	0	0

cd \ ab	00	01	11	10
00	1	1	0	1
01	X	0	0	X
11	0	0	0	0
10	0	0	0	0

1. MSP: $\bar{b}c + \bar{a}c\bar{d}$

2. MPS: $(\bar{a} + b)\bar{c}d$

3. Yes, unique

4. $MSP \neq MPS$

$$4. \quad 1. \quad (\bar{c} + d) + (\bar{a} + c) = \bar{a} + \bar{c} + d$$

$$2. \quad \overline{a + \bar{c} + \bar{d}}$$

$$3. \quad (\bar{a}\bar{c})(cd)(\bar{a}d) = 0$$

