1.20. $(\overline{AB})(B+CD) = (\bar{A}+\bar{B})(B+CD) = \bar{A}B + \bar{A}CD + \bar{B}CD$

解:(1) $F = (\overline{AB+ABD})(B+CD) = (\overline{AB}\cdot\overline{ABD})(B+CD) = \overline{ABD}(B+CD)$

作出真值表.

行号	A	B	C	D	$\overline{AB+ABD}$	$B+CD$	$F(A,B,C,D)$
0	0	0	0	0	1	0	0
1	0	0	0	1	1	0	0
2	0	0	1	0	1	0	0
3	0	0	1	1	1	1	1
4	0	1	0	0	1	1	1
5	0	1	0	1	1	1	1
6	0	1	1	0	1	1	1
7	0	1	1	1	1	1	1
8	1	0	0	0	1	0	0
9	1	0	0	1	1	0	0
10	1	0	1	0	1	0	0
11	1	0	1	1	1	1	1
12	1	1	0	0	0	1	0
13	1	1	0	1	0	1	0
14	1	1	1	0	0	1	0
15	1	1	1	1	0	1	0

$\therefore F(A,B,C,D) = \sum m^4(3,4,5,6,7,11)$

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

No:

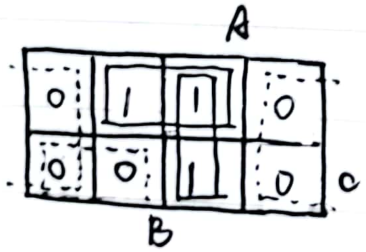
Date:

(3) 行号	A	B	C	D	$(\bar{A}\oplus B)(A\oplus\bar{B})$	$B\oplus C\oplus D$	$F(A,B,C,D)$
0	0	0	0	0	1	0	1
1	0	0	0	1	1	1	1
2	0	0	1	0	1	1	1
3	0	0	1	1	1	0	1
4	0	1	0	0	0	1	1
5	0	1	0	1	0	0	0
6	0	1	1	0	0	0	0
7	0	1	1	1	0	1	1
8	1	0	0	0	0	0	0
9	1	0	0	1	0	1	1
10	1	0	1	0	0	1	1
11	1	0	1	1	0	0	0
12	1	1	0	0	1	1	1
13	1	1	0	1	1	0	1
14	1	1	1	0	1	0	1
15	1	1	1	1	1	1	1

$\therefore F(A,B,C,D)=\sum m^4(0,1,2,3,4,7,9,10,12,13,14,15)=\prod M^4(5,6,8,11)$

1.22.

解: (2)



$\therefore F=B\bar{C}+AB$

$F_1=\bar{B}+\bar{A}C$

$\therefore F=\bar{F_1}=B(A+\bar{C})$

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

(3)

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

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

$F_1=\bar{B}C+\bar{A}C\bar{D}+\bar{B}\bar{D}+A\bar{C}D$

$F=\bar{F_1}=(B+\bar{C})(A+\bar{C}+D)(B+D)(\bar{A}+C+\bar{D})$

补充.

(1)

d	1	d	1
d	1	1	0
0	1	1	0
0	0	0	0

$F=\bar{C}\bar{D}+BD.$

$F_1=C\bar{D}+\bar{B}D$

$\therefore F=\bar{F_1}=(\bar{C}+D)(B+\bar{D})$

(2)

0	0	d	0
1	1	d	1
1	1	d	d
0	0	d	1

$F=D+AC$

$F_1=\bar{C}\bar{D}+\bar{A}\bar{D}$

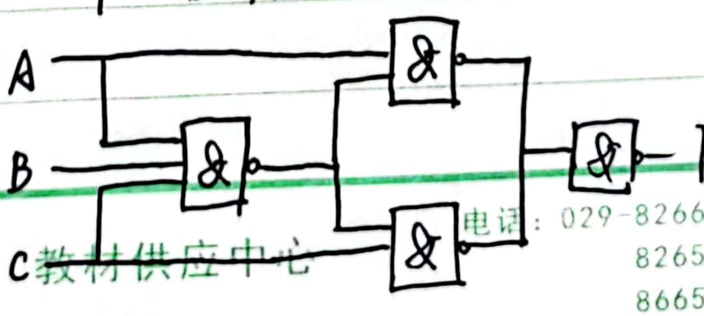
$F=\bar{F_1}=(C+D)(A+D)$

1.23.

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

	1	1	1
	1		1

$\therefore F=B\cdot\overline{ABC}+A\cdot\overline{ABC}$ 需4个与非门



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

$\bar{F}=AB+\overline{AB}\,\bar{C}$

			A	
	0	0	0	0
C	1	1	0	1
		B		

$F=C\,\overline{ABC}$ 3个与非门