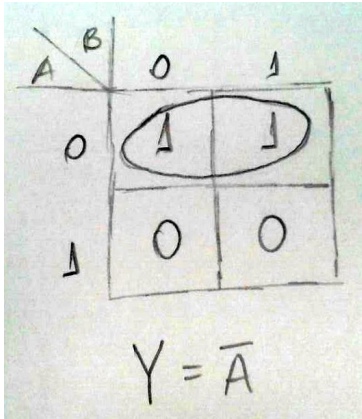
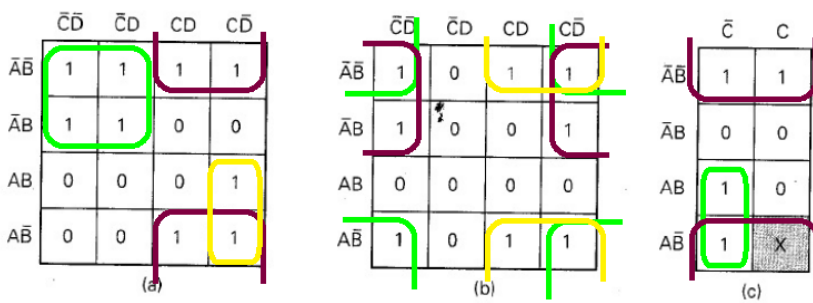


01



02



a.

$$\bar{A}\bar{C} + \bar{B}C + AC\bar{D}$$

b.

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

c.

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

03

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

$$X = \overline{BC} + \overline{AB} + BC$$

$$Y = \overline{C} + \overline{D} + \overline{ACD} + \overline{ABC} + \overline{ABCD} + \overline{ACD} = \overline{CD} + \overline{ACD} + \overline{ABC} + \overline{ABCD} + \overline{ACD}$$

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

$$Y = \overline{D} + \overline{ABC} + \overline{ABC}$$

$$X = \overline{ABC\overline{D}} + \overline{ABD} + \overline{BCD} = \overline{ABC} + \overline{ABD} + \overline{ABD} + \overline{BCD}$$

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

$$X = \overline{BCD} + \overline{ABD} + \overline{BCD} + \overline{ABD}$$

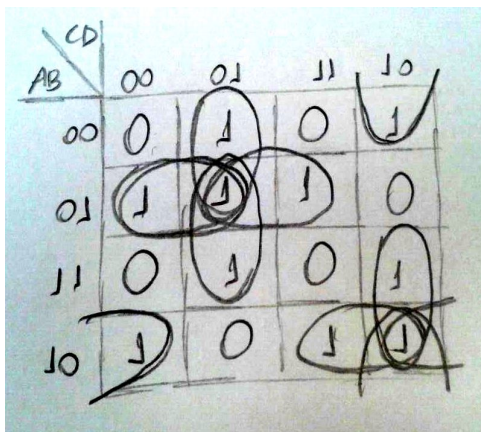
04

A	B	C	D	S
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0

A	B	C	D	S
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1

A	B	C	D	S
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	1

A	B	C	D	S
1	1	0	0	0
1	1	0	1	1
1	1	1	0	1
1	1	1	1	0



$$S = \overline{A}B\overline{C} + \overline{A}C\overline{D} + \overline{A}BD + B\overline{C}D + A\overline{C}\overline{D} + \overline{A}BC + \overline{B}C\overline{D} + \overline{A}B\overline{D} = \overline{A}B(\overline{C} + D) + \overline{C}D(\overline{A} + B) + \overline{A}B(C + \overline{D}) + C\overline{D}(A + \overline{B}) = \overline{A}B\overline{C}\overline{D} + \overline{C}D\overline{A}\overline{B} + \overline{A}B\overline{C}D + C\overline{D}\overline{A}\overline{B} = \overline{A}B \oplus C\overline{D} + \overline{C}D \oplus \overline{A}\overline{B}$$

