K-MAP TUTORIAL

SOP

cd / ab	00	01	11	10
00	0	1	0	0
01	0	1	0	0
11	1	1	1	1
10	0	1	0	0

X =

Σ_{abcd}(

Π_{abcd}(

CIRCUIT

(1)

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

X =

Σ_{abcd}(

Π_{abcd}(

CIRCUIT

(2)

cd / ab	00	01	11	10
00	1	1	0	1
01	0	0	0	0
11	1	1	1	1
10	1	1	0	1

X =

Σ_{abcd}(

Π_{abcd}(

(3)

POS

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

X =

$\Sigma_{abcd}(1, 3, 4, 5)$

Π_{abcd}

CIRCUIT

(4)

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

X =

$\Sigma_{abcd}($

$\Pi_{abcd}($

CIRCUIT

(5)

cd / ab	00	01	11	10
00	0	0	0	1
01	0	0	1	1
11	1	1	1	1
10	0	1	0	0

X =

$\Sigma_{abcd}($

$\Pi_{abcd}($

(6)

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

X =

Σ_{abc}(

Π_{abc}(

(7) SOP

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

X =

Σ_{abc}(

Π_{abc}(

(8) SOP

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

X =

Σ_{abc}(

Π_{abc}(

(9) POS

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

X =

Σ_{abc}(

Π_{abc}(

(10) POS

c / ab	0	1
00	1	0
01	0	0
11	0	1
10	1	1

X =

Σ_{abc}(

Π_{abc}(

(11) SOP

c / ab	0	1
00	0	0
01	0	X
11	0	1
10	0	0

X =

Σ_{abc}(

Π_{abc}(

(12) SOP

c / ab	0	1
00	0	X
01	0	1
11	X	0
10	1	1

X =

Σ_{abc}(

Π_{abc}(

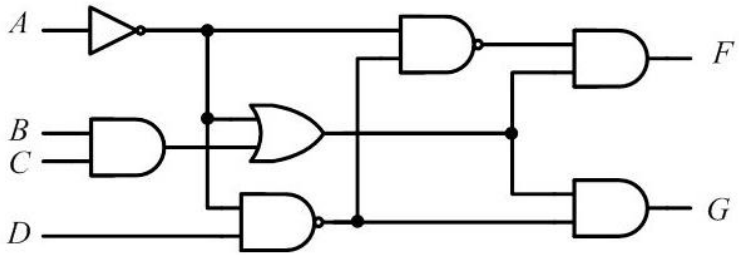
(13) POS

INPUT			OUTPUT
A	**B**	**C**	**X**
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

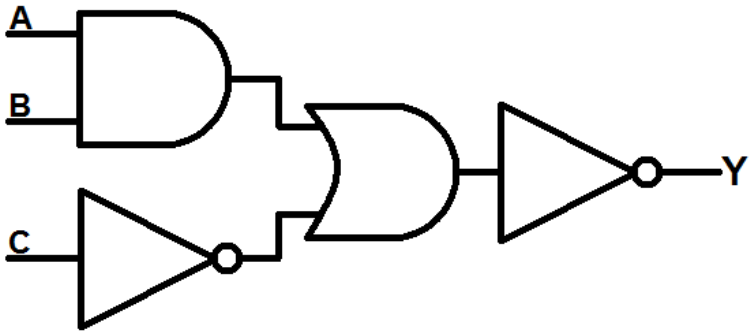
(14)

INPUT				OUTPUT
A	**B**	**C**	**D**	**X**
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	X
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	0
1	1	1	1	X

(15)



(16)



(17)

SIMPLIFIED EQUATION

F =

G =

Y =

STANDARD FORM

F =

G =

Y =

$\boldsymbol{\Sigma_{abcd}}($

$\Pi_{\boldsymbol{abcd}}($