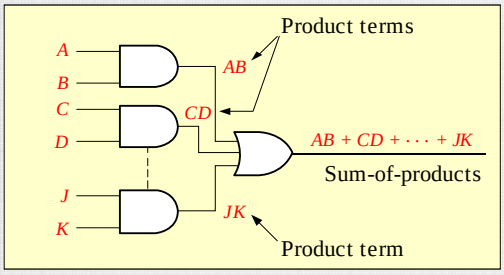
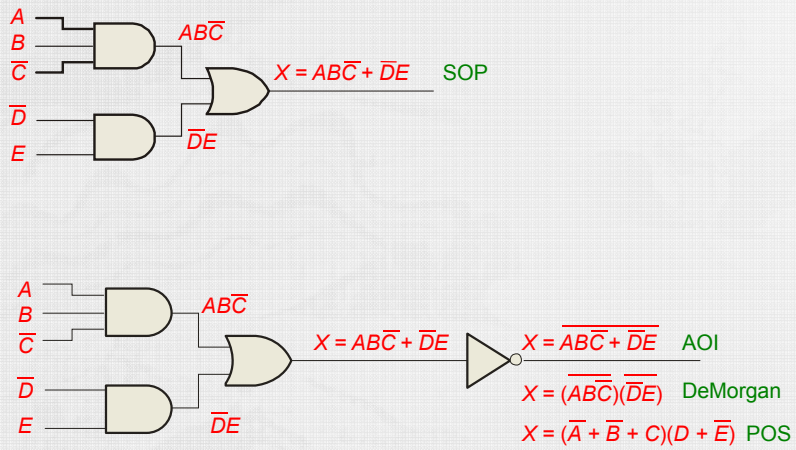
논리회로 및 설계

Chapter 5

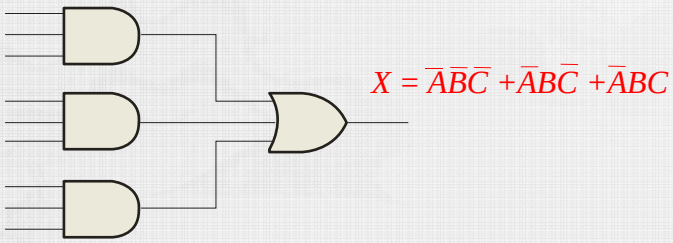
SoP Circuit



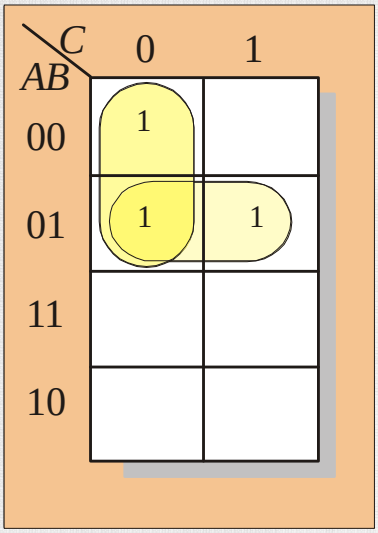
SoP = ~ PoS



SoP standard reduction



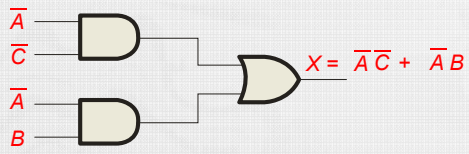
Karnaugh Map & Truth Table



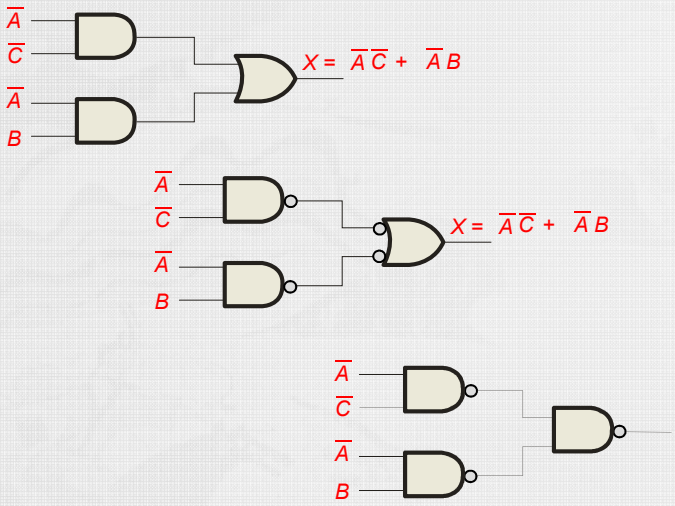
$X = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + \bar{A}BC$

Inputs			Output
A	*B*	*C*	*X*
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

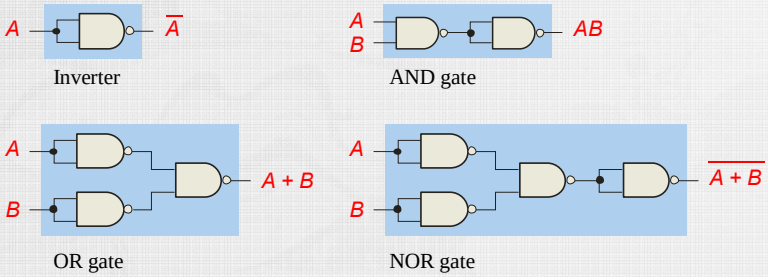
$X = \bar{A}\bar{C} + \bar{A}B$



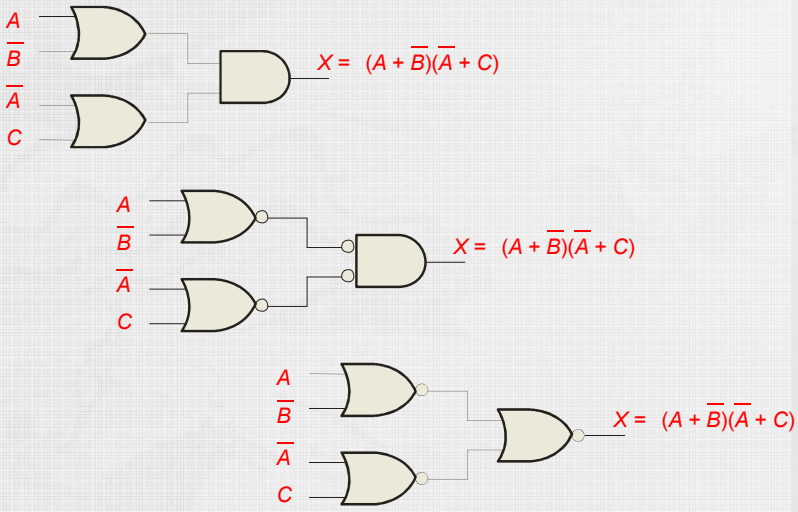
NAND Logic : from SoP



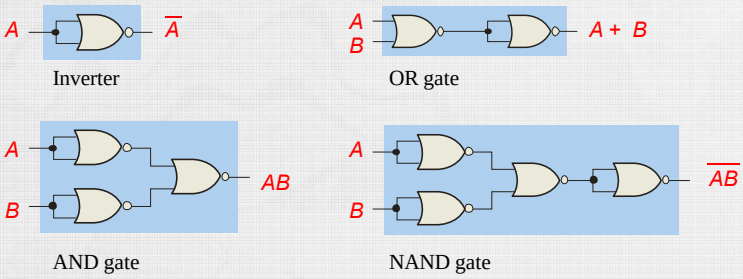
NAND : Universal Gate



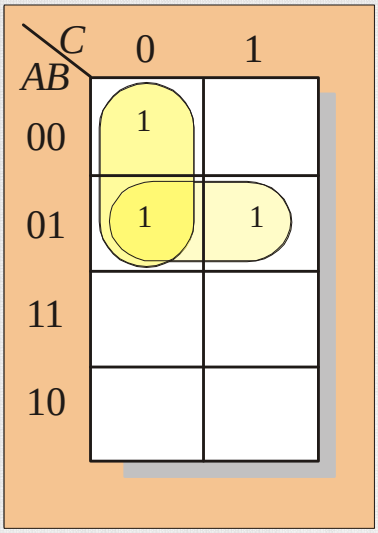
NOR Logic : from PoS



NOR :Universal Gate



PoS from Karnaugh Map

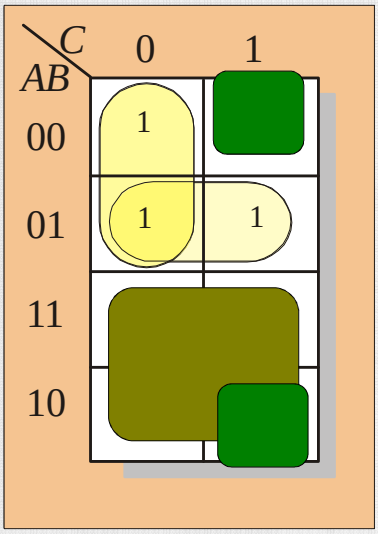


$X = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + \bar{A}BC$

Inputs			Output
A	*B*	*C*	*X*
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

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

PoS from Karnaugh Map



$X = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + \bar{A}BC$

Inputs			Output
A	*B*	*C*	*X*
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

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

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

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

Check point

- SoP =NAND Logic (Universal)
- PoS = NOR Logic (Universal)
- Truth Table = Karnaugh Map = SoP = PoS