디지털 시스템 과제 2   17011599 오정연

#3.2

(c) $F(x,y,z) = \Sigma(0,1,2,4,5,6)$
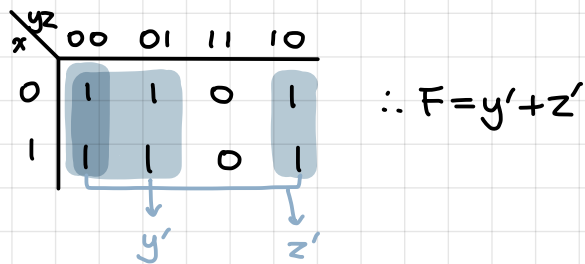
x \\ yz	00	01	11	10
0	1	1	0	1
1	1	1	0	1

y' z'

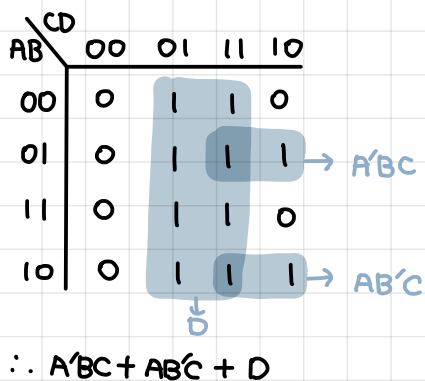$\therefore F = y' + z'$

(f) $F(x,y,z) = \Sigma(0,1,2,3,5,7)$

x \\ yz	00	01	11	10
0	1	1	1	1
1	0	1	1	0

$\rightarrow x'$ $\therefore F = x' + z$

z

#3.6

(c) $A'B'CD + A'BC + C'D + ABCD + AB'C$

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

$\rightarrow A'BC$

$\rightarrow AB'C$

D

$\therefore A'BC + AB'C + D$

(d) $A'B'C' + A'BD + A'BC'D' + BC'D + ABCD$

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

$A'C'$ BD

$\therefore A'C' + BD$

#3.11

$F(w,x,y,z) = \Sigma(1,2,4,5,9,10,13,14)$

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

$\rightarrow wyz'$

$w'xy'$ $y'z$ $x'yz'$

$F = x'yz' + wyz' + w'xy' + y'z$

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

$\rightarrow w'xy$
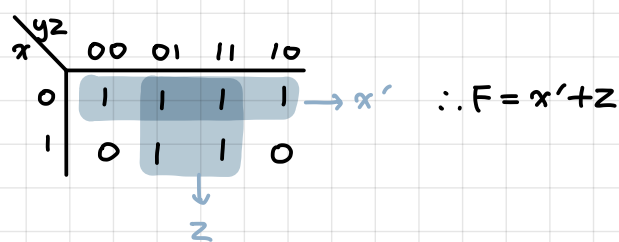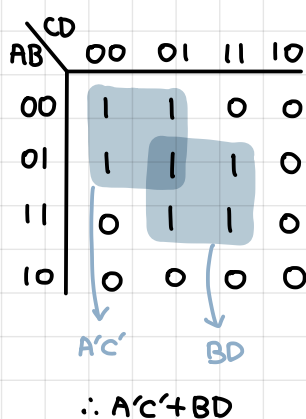
$x'y'z'$ wyz' yz
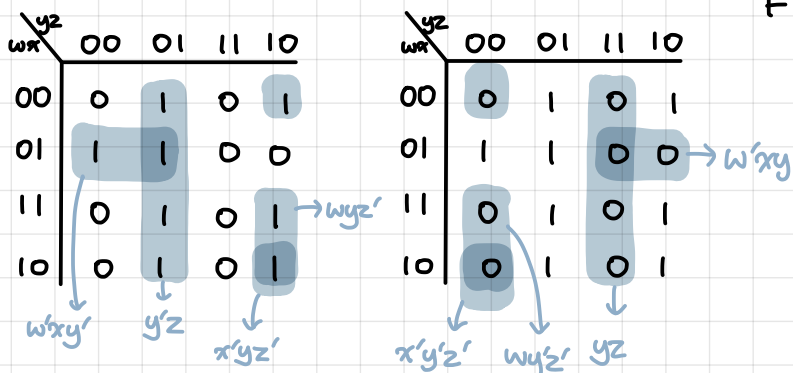
$F' = x'yz' + w'xy + wy'z' + yz$

$F = (F')'$

$= (x'yz' + w'xy + wyz' + yz)'$

$= (x+y+z)(w+x'+y')(w+y+z)(y'+z')$

#3.24

$F(A,B,C,D) = \Sigma(0,4,8,9,10,11,12,14)$

(a)
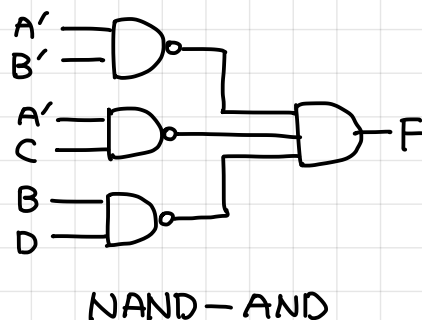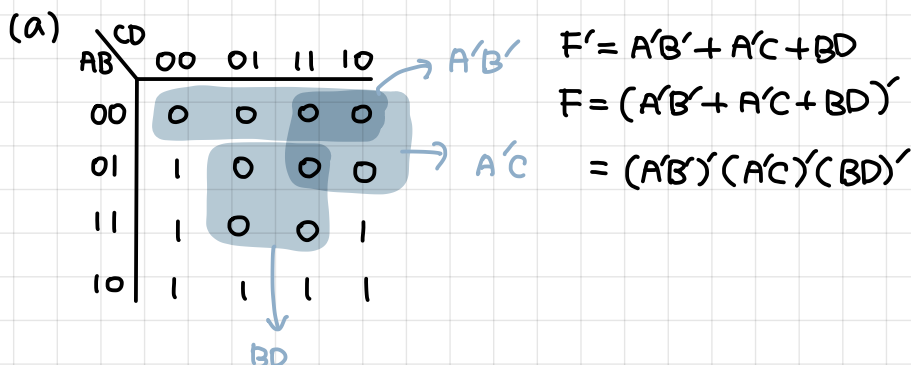
AB \\ CD	00	01	11	10
00	0	0	0	0
01	1	0	0	0
11	1	0	0	1
10	1	1	1	1

$\rightarrow A'B'$

$\rightarrow A'C$

BD

$F' = A'B' + A'C + BD$

$F = (A'B' + A'C + BD)'$

$= (A'B')'(A'C)'(BD)'$

NAND - AND

(d)

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

BC'D

AB'
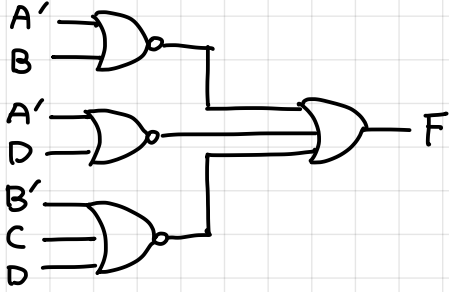
AD'

$F = AB' + AD' + BC'D'$

$= ((AB')' (AD')' (BC'D')')'$

$= ((A'+B)(A'+D)(B'+C+D))'$

$= (A'+B)' + (A'+D)' + (B'+C+D)' \longrightarrow$ NOR-OR

A'
B

A'
D

B'
C
D

F

NOR — OR