Homework 2 No. 4

Simplify each expression using Boolean Algebra

d. $\bar{A}\bar{B}C + \overline{(A+B+\bar{C})} + \bar{A}\bar{B}\bar{C}D$

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

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

$= \bar{A}\bar{B}C + \bar{A}\bar{B}\bar{C}D$ (rule 5)

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

$= \bar{A}\bar{B}(C+D)$ (rule 11)

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

Homework 4

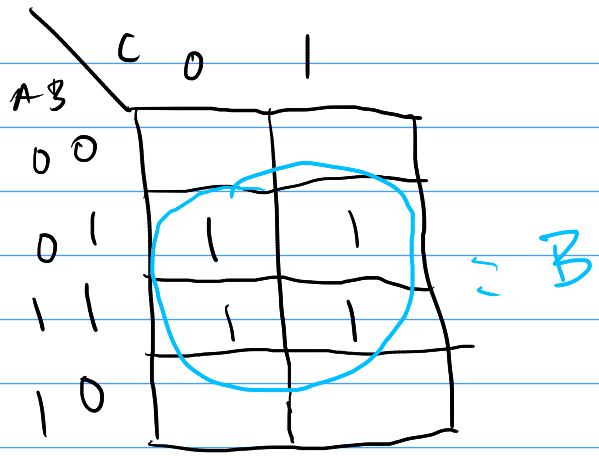
8. Use a Karnaugh map to simplify each expression to a minimum SOP form:

c. $\bar{A}(BC + B\bar{C}) + A(BC + B\bar{C})$

$\bar{A}(BC + B\bar{C}) + A(BC + B\bar{C})$

$= \bar{A}BC + \bar{A}B\bar{C} + ABC + AB\bar{C}$

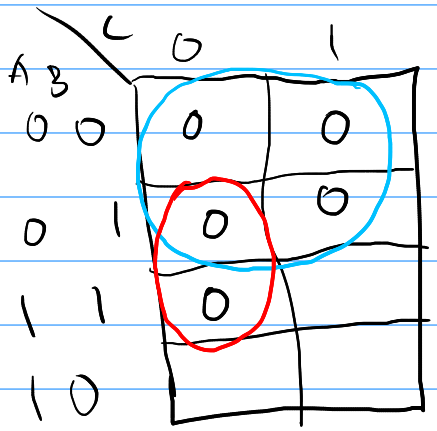
$\bar{A}BC$: 011 $\bar{A}B\bar{C}$: 010 ABC: 111 $AB\bar{C}$: 110



Minimized SOP = $\boxed{B}$

Ex. Use a K-map to minimize the following POS Expression:

$$(A+B+C)(A+B+\bar{C})(A+\bar{B}+C)(A+\bar{B}+\bar{C})(\bar{A}+\bar{B}+C)$$
$$(0+0+0)\quad(0+0+1)\quad(0+1+0)\quad(0+1+1)\quad(1+1+0)$$



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

$(0+0+0+0)(0+0+1+0)(1+0+0+1)$

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

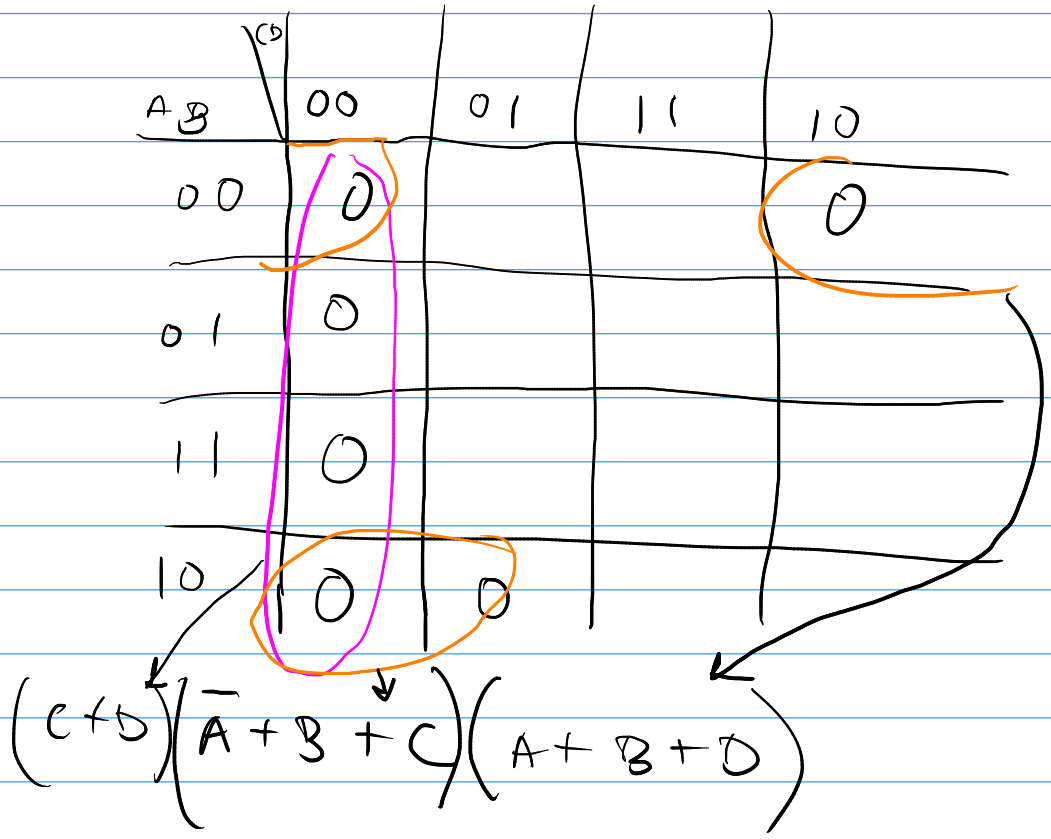
$(A+\bar{B}+C+D)(\bar{A}+\bar{B}+C+D)$

$(0+1+0+0)(1+1+0+0)$

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

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

$(0+0+0+0)(0+0+1+0)(1+0+0+1)$
$(0+1+0+0)(1+1+0+0)(1+0+0+0)$



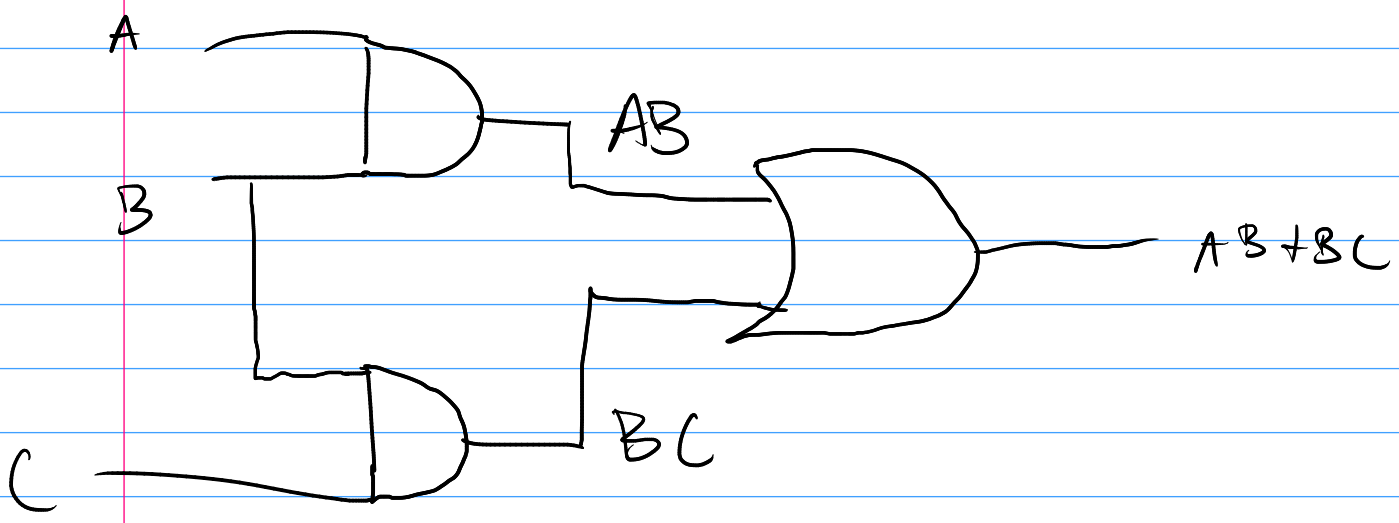
Chapter 5

AND – OR Expression

AB + BC → SOP expression

↑ ↑ ↑

AND OR AND


A
B
C
AB
BC
AB+BC