

Willis T. Allstead

CPE 201

29 February 2016

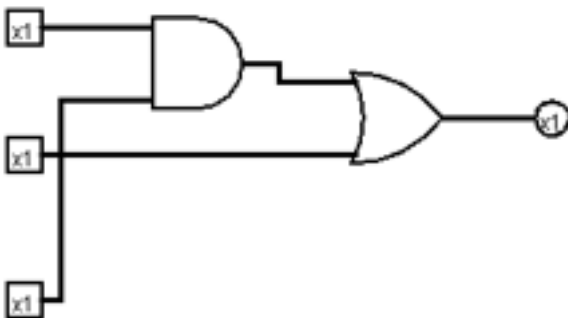
**Lab 04: Logical Expression II****Part 1:**

Part 1

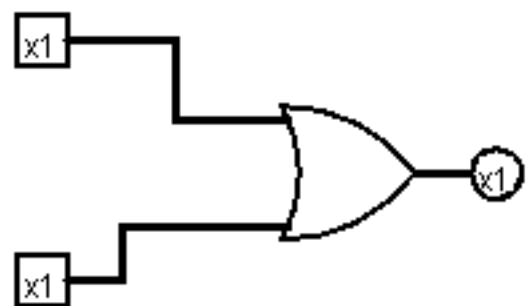
①  $F_1 = AB + A(B+C) + B(B+C)$   
 $AB + AB + AC + BB + BC$   
 $AB + AC + B + BC$   
 $B(A+1+C) + AC$   
 $B + AC$

②  $F_2 = A'(A+B) + (B+AA)(A+B')$   
 $= A'(A+B) + (B+A)(A+B')$   
 $= A'A + A'B + BA + BB' + AA + BB'$   
 $= A'B + BA + A$   
 $= B(A+A') + A$   
 $= B + A$

1)



2)



## Part 2:

1)

Part 2

①  $F(A,B,C) = A+B+C$

ABC	F
000	0
001	1
010	1
011	1
100	1
101	1
110	1
111	1

$$= A'B'C + A'BC' + A'BC + AB'C' + AB'C + ABC' + ABC$$

2)

ABCD | F

0000	1
0001	1
0010	1
0011	1
0100	1
0101	0
0111	1
1000	0
1001	0
1010	1
1011	1
1100	1
1101	0
1110	1
1111	1

POS

$$F = (a'bc'd)(ab'cd)(abc'd)(abcd)$$

$$= (a'+b+c'+d)(a+b'+c'+d')(a+b'+c'+d)(a+b+c'+d)$$

## Part 3:

Part 3

①

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

②

$$(a'b'c) + (a'bc') + (ab'c') + (abc)$$

$$a'(b'c + bc') + ab'c' + abc$$

$$a'(b'c + bc') + a(b'c' + bc)$$

$$a'(b \oplus c) + a(b \oplus c)'$$

$$a'(y) + a(y)'$$

$$a \oplus y$$

$$a \oplus (b \oplus c)$$
