Lab 5 - Pre Lab

CO222

E/19/166

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1. (a)

A	B	A + B	(A+B)'	A'	B'	A' • B'
0	0	0	1	1	1	1
0	1	1	0	1	0	0
1	0	1	0	0	1	0
1	1	1	0	0	0	0

A	B	A • B	(A • B)'	A'	B'	A' + B'
0	0	0	1	1	1	1
0	1	0	1	1	0	1
1	0	0	1	0	1	1
1	1	1	0	0	0	0

According to the above tables,

$(A+B)' = A' \cdot B'$

$(A \cdot B)' = A' + B'$

∴ DeMorgan's theorem is valid

(b)

A	B	C	BC	A+B	A+C	A+BC	(A+B)•(A+C)	B+C	AB	AC	A+(B+C) (A+B+C)	AB+AC
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	1	0	0	1	0	0	0	0
0	1	0	0	1	0	0	0	1	0	0	0	0
0	1	1	1	1	1	1	1	1	0	0	0	0
1	0	0	0	1	1	1	1	0	0	0	0	0
1	0	1	0	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	1	1	1	0	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1

According to the above table,

$A+(BC) = (A+B)\cdot(A+C)$

$A\cdot(B+C) = AB + AC$

∴ Distributive law is valid.

(c)

A	B	B'	AB'	$AB' + B$	$A+B$
0	0	1	0	0	0
0	1	0	0	1	1
1	0	1	1	1	1
1	1	0	0	1	1

According to the above table,

$AB' + B = A + B$

∴ Absorption law is valid.

2 (a)

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

(b)

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

$F = C$

(c) $F = C$

(d) C —— F

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3 (a)

A	B	E	F
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

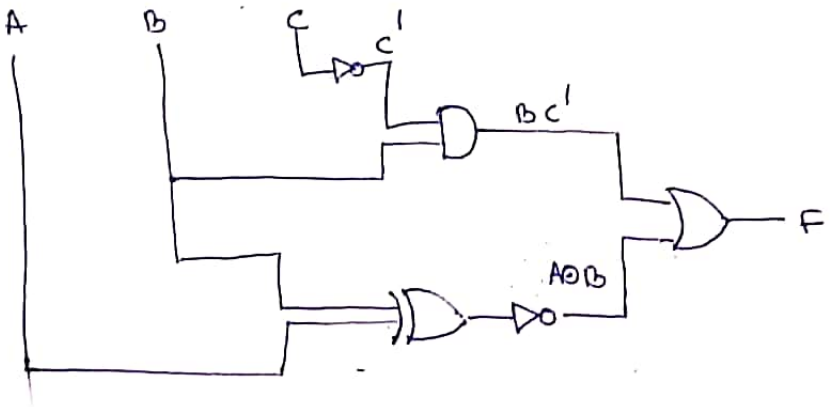
(b)

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

(c) $F = A'B' + AB + Bc'$

$= A \odot B + Bc'$

(d)



$A \odot B + Bc'$