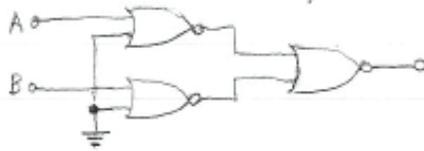


Chapter 11

2. Develop a truth table for the TTL gate circuit shown below



Truth Table

A	B	Out
0	0	0
0	1	0
1	0	0
1	1	1

5. Prove the following Boolean algebraic equation

(a) $\overline{\overline{A}} = A$ Proof:

A	\overline{A}	$\overline{\overline{A}}$
0	1	0
1	0	1

(b) $A+BC = (A+B)(A+C)$ Proof:

A	B	C	$(A+BC)$	$(A+B)$	$(A+C)$	$(A+B)(A+C)$
0	0	0	0	0	0	0
0	0	1	0	0	1	0
0	1	0	0	1	0	0
0	1	1	1	1	1	1
1	0	0	1	1	0	0
1	0	1	1	1	1	1
1	1	0	1	1	1	1
1	1	1	1	1	1	1

(c) $A+\overline{A}B = A+B$ Proof:

A	B	\overline{A}	$(A+\overline{A}B)$	$(A+B)$
0	0	1	0	0
0	1	1	1	1
1	0	0	1	1
1	1	0	1	1

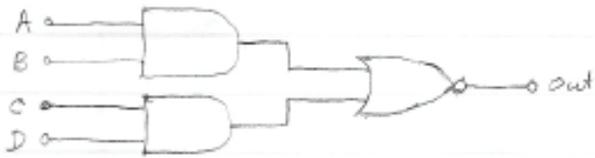
(d) $AB+\overline{A}C = AB+BC+\overline{A}C$ Proof:

A	B	C	AB	$\overline{A}C$	$(AB+\overline{A}C)$	BC	$AB+\overline{A}C+BC$
0	0	0	0	0	0	0	0
0	0	1	0	1	1	0	1
0	1	0	0	0	0	0	0
0	1	1	0	1	1	1	1
1	0	0	0	0	0	0	0
1	0	1	0	0	0	0	0
1	1	0	1	0	1	0	1
1	1	1	1	0	1	1	1

(e) $AB+\overline{A}B+\overline{A}\overline{B} = A+B$ Proof:

A	B	$(A+B)$	AB	$\overline{A}B$	$\overline{A}\overline{B}$	$AB+\overline{A}B+\overline{A}\overline{B}$
0	0	0	0	0	0	0
0	1	1	0	1	0	1
1	0	1	0	0	0	0
1	1	1	1	0	0	1

11. The And-Or-Invert (AOI) gate is symbolized below, Develop its truth table.



Truth Table	A	B	C	D	AB	CD	$\overline{AB+CD}$
	0	0	0	0	0	0	1
	0	0	0	1	0	0	1
	0	0	1	0	0	0	1
	0	0	1	1	0	1	0
	0	1	0	0	0	0	1
	0	1	0	1	0	0	1
	0	1	1	0	0	0	1
	0	1	1	1	0	1	0
	1	0	0	0	0	0	1
	1	0	0	1	0	0	1
	1	0	1	0	0	0	1
	1	0	1	1	0	1	0
	1	1	0	0	1	0	0
	1	1	0	1	1	0	0
	1	1	1	0	1	0	0
	1	1	1	1	1	1	0

14.

Decimal	BCD	Binary
888	1000 1000 1000	1101111000
41	0100 0001	101001
1993	0001 1001 1001 0011	11111001001
129	0001 0010 1001	10000001
164	0001 0110 0100	10100100
42	0100 0010	101010