

Transistor-Level Circuit Understanding

Part A $Out_1 = \overline{A + B + C} = \overline{A} \overline{B} \overline{C}$ $Out_2 = \overline{A + BC} = \overline{A}(\overline{B} + \overline{C})$ $Out_3 = A\overline{B} + \overline{A}C$

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

C	B	A	Out 2
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	0

C	B	A	Out 3
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

Part B $Out_1 = (\overline{A} + B)\overline{C}$ $Out_2 = \overline{A} \overline{B} \overline{C} + B$ $Out_3 = \text{undefined}$

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

C	B	A	Out 2
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

C	B	A	Out 3
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	float
1	0	0	float
1	0	1	1
1	1	0	0
1	1	1	0