CMOS circuit review

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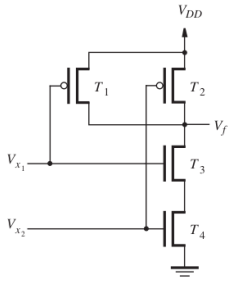
1 CMOS gate review

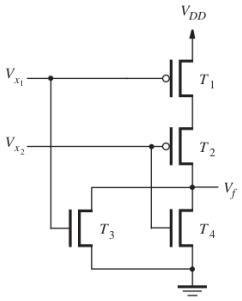


(a) Circuit

x_1	x_2	T_1	T_2	T_3	T_4	f
0	0	on	on	off	off	1
0	1	on	off	off	on	1
1	0	off	on	on	off	1
1	1	off	off	on	on	0

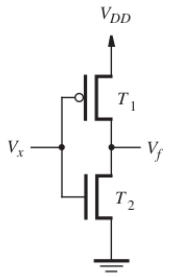
(b) Truth table and transistor states

CMOS NAND gate



x_1	x_2	T_1	T_2	T_3	T_4	f
0	0	on	on	off	off	1
0	1	on	off	off	on	0
1	0	off	on	on	off	0
1	1	off	off	on	on	0

CMOS NOR gate

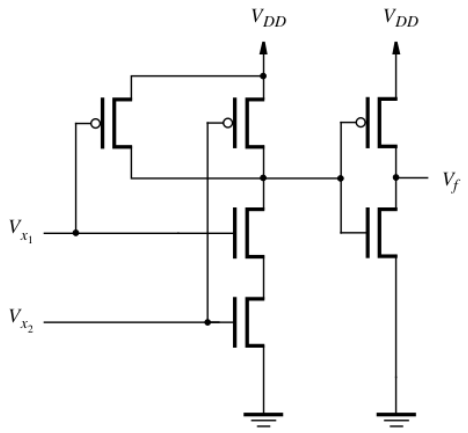


(a) Circuit

x	T_1	T_2	f
0	on	off	1
1	off	on	0

(b) Truth table and transistor states

CMOS NOT gate



CMOS AND gate

Example 1 *Derive the CMOS complex gate that implements* $f = \overline{x_1x_2 + x_3x_4 + x_5}$.

Problem 1 *Derive the CMOS complex gate that implements* $f = \bar{x}_1\bar{x}_2x_3 + \bar{x}_1x_2\bar{x}_3 + x_1\bar{x}_2\bar{x}_3 + x_1x_2x_3$.