

# ECE 424 – INTRODUCTION TO VLSI DESIGN + LAB

## LABORATORY WORK 3

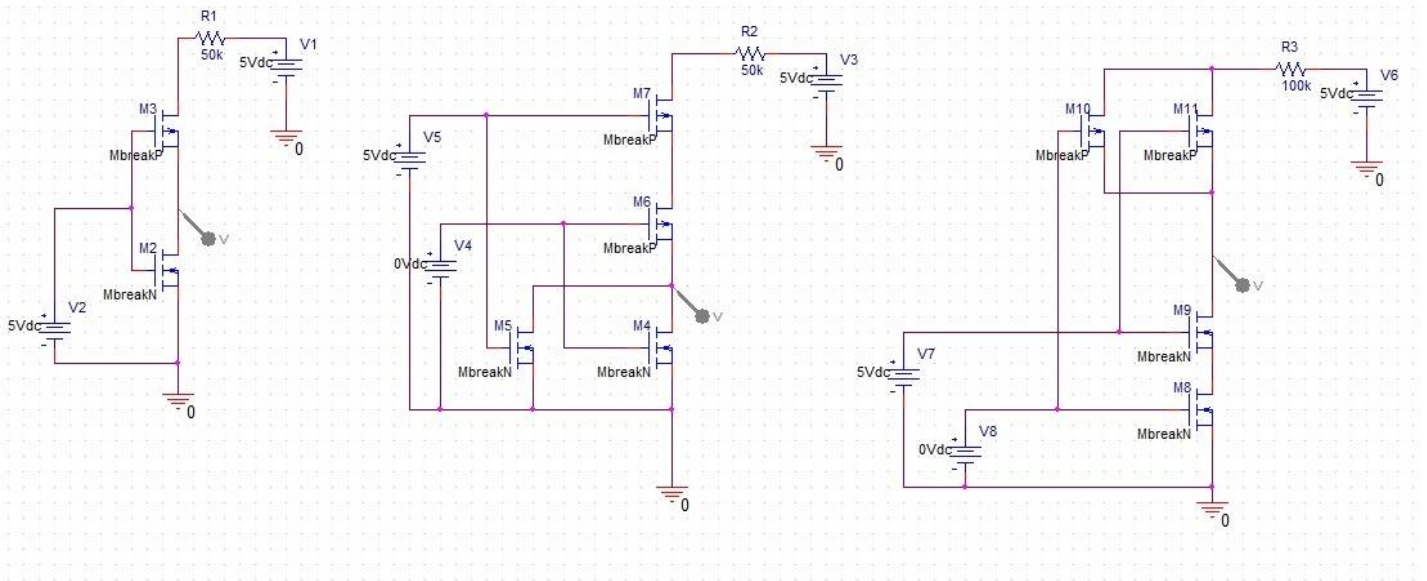
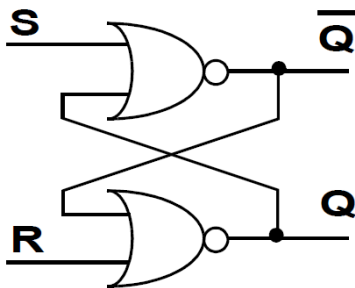


Figure 1

There are 3 kinds of CMOS logic circuits in Figure 1.

1. Construct these circuits by using ORCAD and try to find the logic types of circuits.
2. Draw the truth table and fill the table for each circuit.
3. Construct CMOS OR and CMOS AND Logic gates by using ORCAD and simulate it. Draw the truth table and fill it for each circuit.



S	R	Q <sup>+</sup>	$\overline{Q}^+$	Function
0	0	Q	$\overline{Q}$	Storage State
0	1	0	1	Reset
1	0	1	0	Set
1	1	0-?	0-?	Indeterminate State

Figure 2

4. S-R Latch and its characteristic (truth) table is given in Figure 2. Construct that circuit by using compatible CMOS logic gates and compare your results with given truth table.

### Homework:

1. Construct a **static full adder** by using CMOS gates on PSpice and simulate it. **Not just the project file, whole project folder should be sent.** Send it to your laboratory assistant.

**Deadline: 05.11.2013 Tuesday, 21:00.**

**No late submission is going to be accepted!**

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