

# CSCE 5730: Digital CMOS VLSI Design

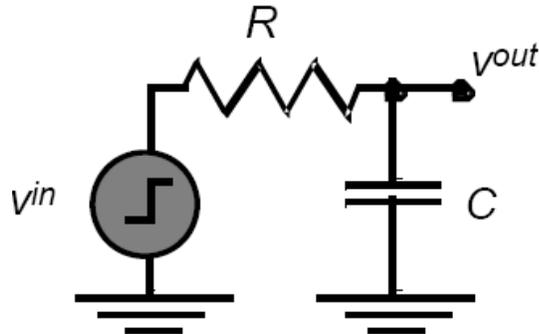
Assignment # 2, Total Marks = (4x25) = 100.

Assigned Date: 1<sup>st</sup> Oct 2008 (Wed), Due Date: 13<sup>th</sup> Oct 2008 (Mon)

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1. Consider the following RC circuit with fixed values of R, C, and pulse supply voltage.



Find the transient response of the circuit for output voltage using LTSpice. What is the time to reach 50% point? What is the time to reach 90% point?

2. Using LTSpice perform the transistor level static CMOS realization of basic logic gates (Inverter/NAND/NOR/AND/OR). Perform their simulation to verify the truth tables.
3. Synthesize the Boolean function  $Y = (A*B + C*D)$ . Show all the steps. Verify the circuit functionality using LTSpice.
4. Synthesize the Boolean function  $Y = ((A*B)' + C*D + E)$ . Show all the steps. Verify the circuit functionality using LTSpice.