

CS653A: Introduction to VLSI Design

Homework #2

Please use Synopsys HSPICE to simulate the behavior and performance of the following circuits:

- (1) An inverter (cell name: **inv**)
- (2) A two-input NAND gate (cell name: **nand2**): Please also measure the (a) rise time, (b) fall time, and (c) propagation delay of the NAND gate
- (3) The RC circuit shown in Fig. 5.1 and 5.2 of the textbook
- (4) The nMOS transistor's I-V characteristics as shown in Fig. 5.5 and 5.6 of the textbook
- (5) An 8-bit adder: (a) please use HSPICE to verify that the function is correct; (b) please measure the propagation delay using HSPICE.

Deadline: Thursday, December 3rd, 2009