

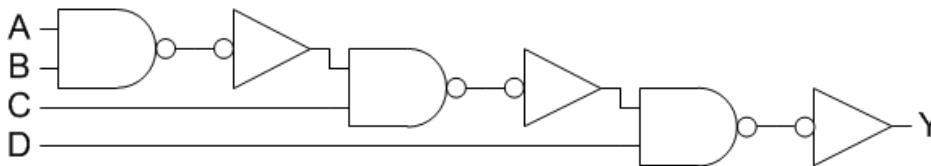
E85: Digital Design and Computer Architecture

Problem Set 3

- 1) Suppose propagation delays for a 10-nm integrated circuit process are given in the table below.

Cell	Propagation Delay (ps)	Contamination Delay (ps)
NOT	6	4
NAND2	8	6
NOR2	10	8
NAND3	10	8
NOR3	12	10

Determine the propagation and contamination delays of the following circuit. Redesign it to accomplish the same function while minimizing propagation delay, using only gates from the table above. What are the propagation and contamination delays of your optimized circuit?



- 2) Latches and Flip-Flops

Do Exercises 3.4 and 3.6 from the textbook.

- 3) Combinational and Sequential Logic

Do Exercise 3.18 from the textbook.

- 4) FSM design

Do Exercise 3.26 from the textbook.

- 5) Impact on society: Name two systems that you encounter in daily life that are readily described as finite state machines.

- 6) How long did you spend on this problem set? This will not count toward your grade but will help calibrate the workload.