

University of Illinois at Urbana-Champaign
Department of Electrical and Computer Engineering

ECE 362/CS 362/MATH 391 : LOGIC DESIGN

Spring 2002

Problem Set 10

Pulse Mode Sequential Circuits, Limitations

Issued: Thursday, April 11th.

Due: Thursday, April 18th.

Reading from McCluskey: Chapter 8.

Problem 10.1

Problem 8.2 (part (b) only) from McCluskey.

Problem 10.2

Problem 8.4 (parts (b), (c) and (d) only) from McCluskey. (Hint: The operation of non-gated pulse-triggered S-R flip-flops is described in pages 348-349 of the textbook; use this discussion to obtain the characteristic equation of the given flip-flops in terms of transition variables $\langle x_1 \rangle \downarrow$, $\langle x_2 \rangle \downarrow$, and $\langle x_3 \rangle \downarrow$.)

Problem 10.3

Prove or disprove the following statement: “There is no finite state machine that detects precisely the set of binary sequences for which the number of 0’s is exactly three times the number of 1’s.”