

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

ECE 362/CS 362/MATH 391 : LOGIC DESIGN

Spring 2002

**Problem Set 8**

**Binary Decision Diagrams, Fundamental Mode Sequential Circuits**

**Issued:** Thursday, March 14th.

**Due:** Thursday, March 28th.

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**Reading from McCluskey:** Chapter 7.

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**Problem 8.1**

Obtain reduced ordered binary decision diagrams (BDDs), in the order  $x_1, x_2, x_3, \dots$ , for the following functions.

- (a) The three-variable majority function  $f(x_1, x_2, x_3)$ .
- (b) The function  $f(x_1, x_2, x_3, x_4)$  which outputs 1 if and only if the two-bit integer  $x_1x_2$  is larger than the two-bit integer  $x_3x_4$ .

**Problem 8.2**

Problem 7.3 from McCluskey. Assume that SR latches are set-dominant and analyze the network by giving (1) the excitation equations, (2) the excitation table, (3) the transition table, (4) the output table, (5) the state table and (6) the flow table.

**Problem 8.3**

Problem 7.11 from McCluskey.