Name _____ CM _____ Due date: Thursday, Sept. 18

ECE130-03 Homework #5 Fall 2003

(Boolean algebra)

1 (Problem 4 on page 28 of Dr. Eccles' book). Use Boolean algebra to simplify $Z(A,B,C) = A \bullet \overline{B} + \overline{A} \bullet B + A \bullet B \bullet C$. Be sure to indicate which theorems you are applying.

2 (Adapted from Problem 10 on page 29 of Dr. Eccles' book). Complement each of the following, using DeMorgan's theorem so that a sum-of-product expression will become a product-of-sum one, and visa versa.

(a) $Z(A,B,C) = \overline{A} \bullet \overline{B} \bullet C + B \bullet \overline{C}$

(b) $Z(A,B,C) = (A + B + \overline{C}) \bullet (\overline{A} + C)$

3 (Adapted from Problem 11 on page 29 of Dr. Eccles' book). Convert the following functions to their minterm canonical form using (a) logic expression and (b) the Σ notation.

(c)) $Z(A,B,C) = A \bullet B + \overline{A} \bullet \overline{B} \bullet C$

(d) $Z(A,B,C,D) = A \bullet \overline{B} \bullet \overline{C} + B \bullet C \bullet \overline{D} + A \bullet B \bullet D$

4 (Adapted from Problem 19 on page 29 of Dr. Eccles' book). Write the maxterm canonical form using the Π notation for the following truth table.

A	B	C	Z(A,B,C)
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

5 (Adapted from Problem 21 on page 29 of Dr. Eccles' book). For the truth table in Problem 4, write the minterm canonical form using the Σ notation.