Logic Lab – Exp #2

Boolean Function Formation from Truth Table and Implementation

Y-0016/001D and 2D boards (given in the last page)

1) Design a circuit that has a 3-bit binary input and a single output f. The output is determined by:

f=0, if the input is less than 5
f=1, otherwise
Formulate the truth table, form Boolean function using **minterms**, minimize the function and implement its final form using **Y-0016/002D** board.
Verify your results experimentally.

2) Design a circuit that has a 3-bit binary input and a single output f. The output is determined by:

f=0, if the input is less than 3
f=1, otherwise
Formulate the truth table, form Boolean function using **maxterms**, and implement its final form using **Y-0016/001D** board.
Verify your results experimentally.

3) Design a combinational circuit that transforms a 3-bit binary number **1 to 4** into its **4(-2)(-1) code equivalent.**

4(-2)(-1) code is a 3 bit number that represents digits (0-4). The bits are multiplied with 4, -2, -1 respectively to obtain its decimal value.

For example, the 4-2-1 code equivalent for the digit 3 is (101), because 3=1*4+0*(-2)+1*(-1).

The inputs will be the binary numbers 1 to 4. The output will be its 4(-2)(-1) code equivalent

First, formulate the truth table, and simplify it. Then implement its final form using **Y-0016/001D** board.
Verify your results experimentally.

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