

PRE-LAB

Using Boolean (switching) algebra, develop a minimum SOP implementation of the logic function shown below. Demonstrate the equivalence of the expressions by developing a truth table showing the original function as well as the minimized SOP.

$$Y(A,B,C,D) = \sum m(0, 2, 4, 7, 8, 10, 12, 15) \quad (1)$$

LAB

1. Implement the unreduced function F from last week's lab on the Altera system; use the switches for logic variable inputs and the LEDs for output.

$$F(A,B,C) = AB + A'BC' + BC \quad (2)$$

2. Simulate the minimized function Y using Quartus and verify correct operation (functional simulation).
3. Implement the minimized function on the Altera board. Again, use the switches for logic variable inputs and the LEDs for output. Demonstrate your design to your instructor.