ECE-2206 Digital Design Lab

EXPERIMENT #2

SIMPLIFING CIRCUITS USING BOOLEAN ALGEBRA

OBJECTIVES:

1) Constructing and testing both initial and simplified circuits.
2) Analyzing performance of the initial and simplified circuits.
3) Discussing the benefits of circuit reduction.

COMPONENTS:

7404, 7408, 7411, 7432 (Additional gates may be needed)

NOTE: Please turn in the following parts as prelab.
Part 1A through part 1D for each circuit diagram.

Repeat parts 1 through 3 for each circuit in fig2-1 through fig2-4:

PART 1) A) Write the logical expression.

B) Drive the truth table.

C) Simplify the function using Boolean Algebra.

D) Draw the simplified circuit diagram.

PART 2) Construct and test both the initial and the simplified circuits. List the results in proper truth tables.

PART 3) For each circuit :

Compare the initial and simplified circuits based on number of input lines.

PART 4) Write a general conclusion.

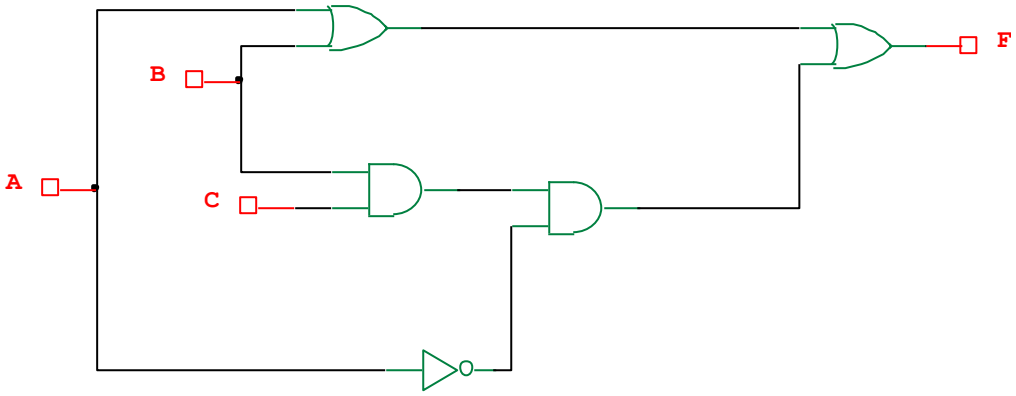

FIG. 2-1

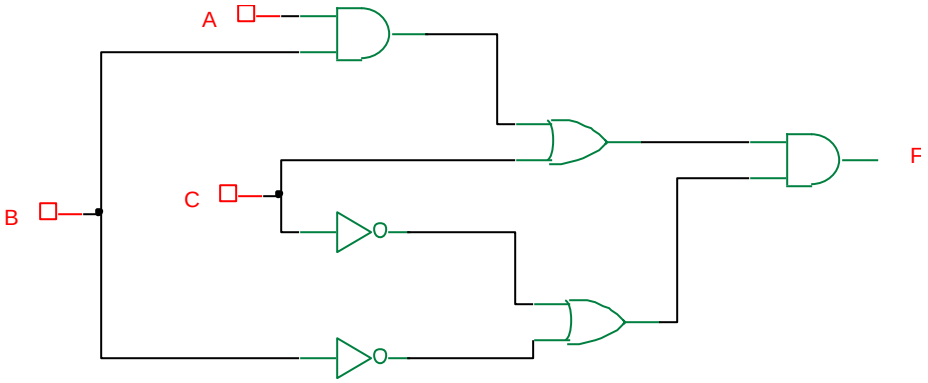

FIG. 2-2

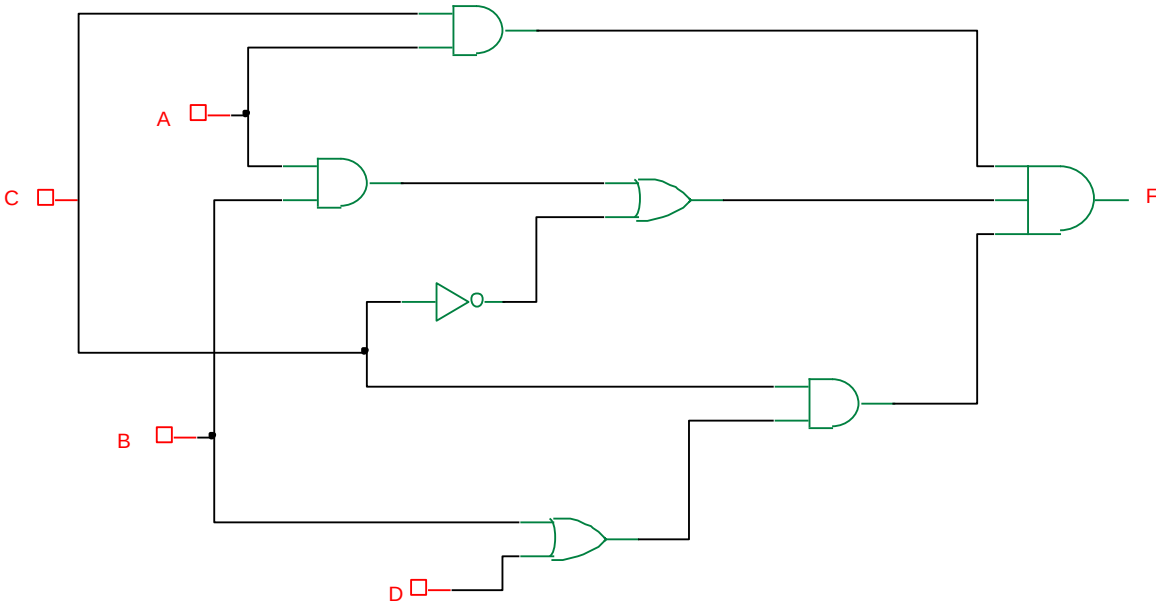

FIG. 2-3

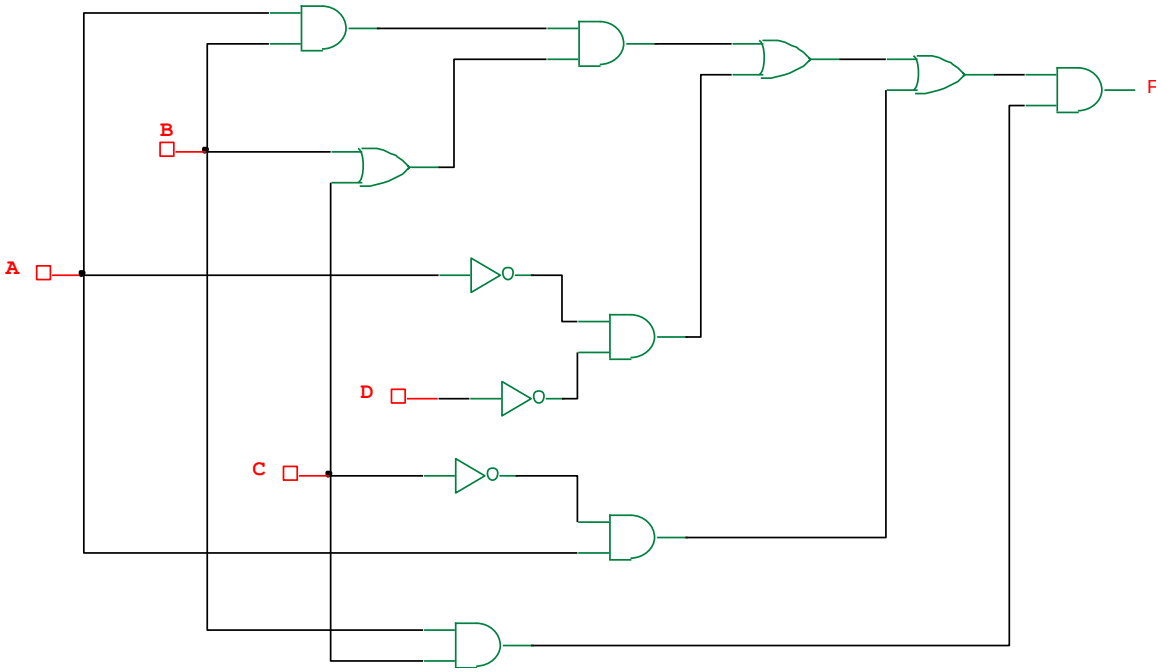

FIG. 2-4