Bangladesh University of Engineering and Technology

Department of Computer Science and Engineering

Course: CSE 206
Digital Logic Design Sessional

Experiment No.- 2
Topic: Truth tables and simplification using Boolean Algebra

Implement the following problems.

1. Derive the output equations for a 3-bit gray to binary code converter and implement it with the required logic gates.

2. There are some switches where S1 is connected through switch S2 that is parallel with serially connected switches S3, S4. A lamp will be **ON** if switch S1 and any of the parallel connection is ON.

Answer the following questions:

1. Simplify the logic function, find the truth table and write down the logic expression. Simplify the logic expression as far as possible using Boolean algebra,
   $f(w, x, y, z) = \Sigma\ (0, 5, 7, 13, 15)$

2. Design a majority voter circuit of 4 bits that gives positive output, if 3 or more inputs are positive.

Report:

For each of the problems/questions report should cover the following points.

- Problem specification
- Truth table
- Required equation in minimized form with the necessary steps
- Required instruments
- Circuit diagram with pin number