

**Bangladesh University of Engineering and Technology**  
Department of Computer Science and Engineering

Sections: A1 & B1

Course: CSE 206

Title: Digital Logic Design Sessional

Experiment No. 4

Topic: Comparator, adder / subtractor

**Implement the following problems:**

1. Design using basic gates, a 2-bit comparator to compare 2-bit numbers X and Y. The circuit should provide 3 output lines to indicate  $X > Y$ ,  $X = Y$  and  $X < Y$ .
2. Design a 1-bit full subtractor circuit using basic logic gates. Inputs are P, Q and R denoting minuend, subtrahend and previous borrow respectively. The outputs are D and B representing the difference and output borrow.

**Report:**

For each of the problems, prepare report as follows:

- a. Required instruments, ICs, software etc.
- b. Truth table
- c. Required equation in minimized form showing necessary steps
- d. Circuit diagram.