# CPS213 – COMPUTER ORGANIZATION I
## LAB #3

## COMBINATIONAL CIRCUIT DESIGN

All students are required to answer the questions individually and hand in a paper copy of their written answers to TA during the first hour of the lab. Then continue with the simulation of the circuits and show the simulation results to TA.

**Part A:** A majority circuit is a combinational circuit whose output is equal to 1 if the input variables have more 1s than 0s. The output is 0 otherwise.
Design a 3-input majority circuit.
Simulate your design.

**Part B:** Design a logic circuit that provides the 2's complement of a 4-bit binary number.
Simulate your design.

**Part C:** Design a 1-bit full adder using two 4-by-1 multiplexers.
Simulate your design.