CPS213 – COMPUTER ORGANIZATION I
LAB #4

COMBINATIONAL CIRCUIT DESIGN 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 combinational circuit is defined by the following three Boolean functions:

$F_1 = x' y' z' + x z$
$F_2 = x y' z' + x' y$
$F_3 = x' y' z + x y$

Design the circuit with a decoder and external gates.
Simulate your design.

Part B: Design a SR flip-flop using only two NOR gates.
Simulate the design and verify the flip flop truth table.

Part C: Design a JK flip-flop using a D flip-flop, a 2-to-1 multiplexer and an inverter.
Simulate the design and verify its functionality.