

CPS213 – COMPUTER ORGANIZATION I

LAB #5

SEQUENTIAL 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: You are to design a sequential circuit which has two inputs, X and an enable input, E . You will be using two JKFFs in your design.

When the circuit is disabled, i.e., $E = 0$:

- There will be no change, that is, the circuit remains in the same state regardless of the value of X .

When the circuit is enabled, i.e., $E = 1$:

- If $X = 1$, the circuit goes through circular state transitions, $00 \rightarrow 01 \rightarrow 10 \rightarrow 11 \rightarrow 00$ and repeats.
- If $X = 0$, the circuit goes through the state transitions, $00 \rightarrow 11 \rightarrow 10 \rightarrow 01 \rightarrow 00$ and repeats.