

EHB 205E: Introduction to Logic Design

Quiz 4

Duration: 90 Minutes

Grading: 1) 30%, 2) 30%, 3) 40%

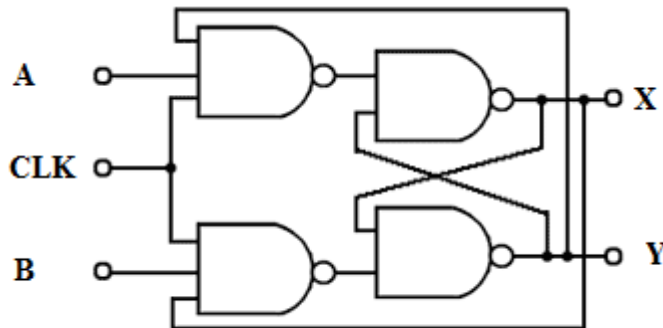
Quiz is in closed-notes and closed-books format

For your answers please use the space provided in the exam sheet

GOOD LUCK!

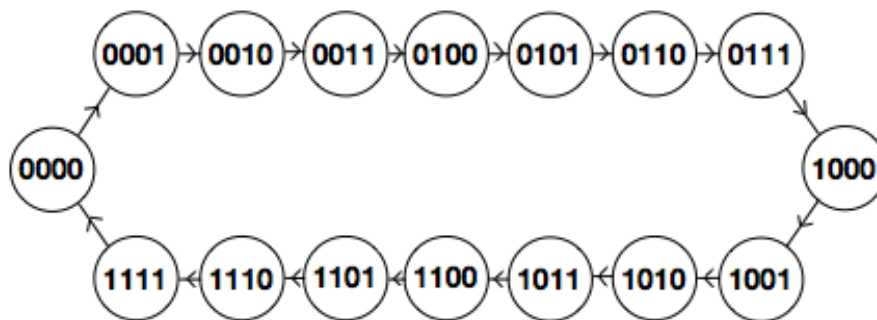
1. SEQUENTIAL CIRCUIT ANALYSIS

Consider a sequential circuit shown below. It has three input A, B, and CLK and two outputs X and Y. **Obtain its truth table.**



2. SEQUENTIAL CIRCUITS: STATES TO CIRCUITS

Consider a state diagram shown below. Implement this state diagram using T (toggle) flip-flops and AND gates. What is the purpose of the circuit?



3. STATE MACHINE SYNTHESIS

Design a counter with a control input. When the input is high, the counter should sequence through three states: 10, 01, 11 and repeat. When the input is low the counter should sequence through the same states in the opposite order 11, 01, 10 and repeat.

- Draw the state diagram and state transition table.
- Implement the counter using D flip-flops and gates.