Cpr E 281 LAB10
ELECTRICAL AND COMPUTER ENGINEERING
IOWA STATE UNIVERSITY

Lab 10 Answer Sheet

Name & Std No.:_____ **Lab Section:**_____

Date:_____

PRELAB:

Refer to Chapter 5 in your textbook and the lab instructions to complete your pre-lab. Please read all the material and complete the circuit diagrams before you come to the lab.

Q1. Draw the circuit diagram for the 4-bit **Shift Register** using D flip-flops in the space below.

Q2. Draw the circuit diagram for the 4-bit **Synchronous Up-Counter** using **D flip-flops** in the space below.

Q3. Draw the circuit diagram for the 4-bit **Synchronous Up-Counter** using **T flip-flops** in the space below.

Q4. Draw the circuit diagram for the 4-bit **Asynchronous Up-Counter** using T flip-flops in the space below.

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Q5. Draw the circuit diagram for the 4-bit **Asynchronous Down-Counter** using T flip-flops in the space below.

LAB:

2.0 Fill in the sequence table below. *Watch out for switch bouncing!*

In	*Q1*	*Q2*	*Q3*	*Q4*
t0 = 1	----	----	----	----
t1 = 0		----	----	----
t2 = 1			----	----
t3 = 1				----
t4 = 1				
t5 = 0				
t6 = 0				
t7 = 0				

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Hardware results demonstrate a good circuit. TA Initials: _____

3.1 Hardware results demonstrate a good circuit. (D flip-flops) TA Initials: _____

Hardware results demonstrate a good circuit. (T flip-flops) TA Initials: _____

3.2 Seven segment shows 0 to F. (UP) TA Initials: _____

Seven-segment display shows F to 0. (DOWN) TA Initials: _____