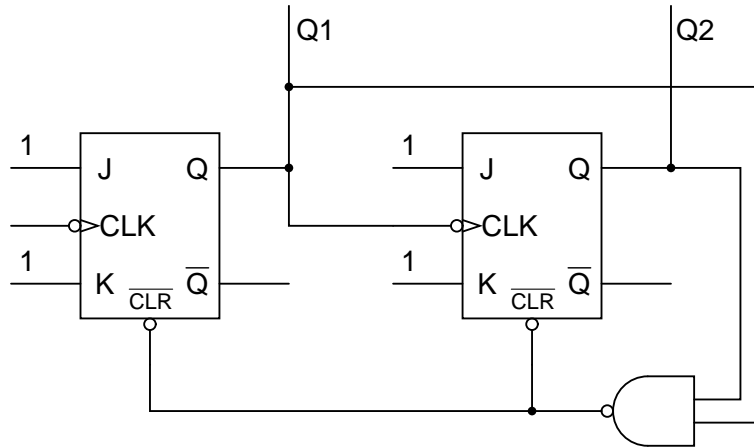


Indian Institute of Technology, Delhi
EEP 201: Digital Electronic Circuits Laboratory
Experiment 6, July-Dec 2008
Synchronous and Asynchronous Counters

1. Connect the circuit for a mod-3 counter as shown in the figure. Is this a synchronous, or an asynchronous counter? Display the Q1 and Q2 waveforms on a CRO and verify the functioning of the circuit.



2. Design a mod-5 synchronous counter in the following manner.
 - First make a state table specifying the current state and the next state. Some of the states can be don't cares.
 - Calculate the number of D-flip-flops you need.
 - Next, assign values to the D inputs of all the flip-flops.
 - Using Karnaugh-maps, evaluate the logical expressions for the inputs of the different flip-flops.
 - Make the circuit using D-flip-flops, and logic gates.