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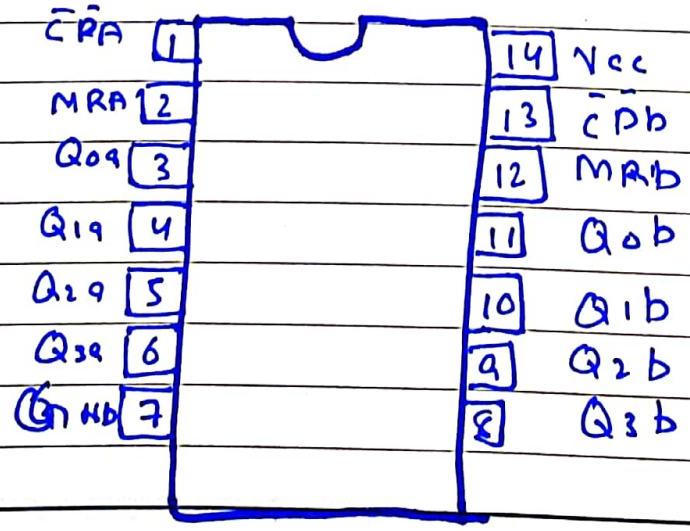
Section: 2C2

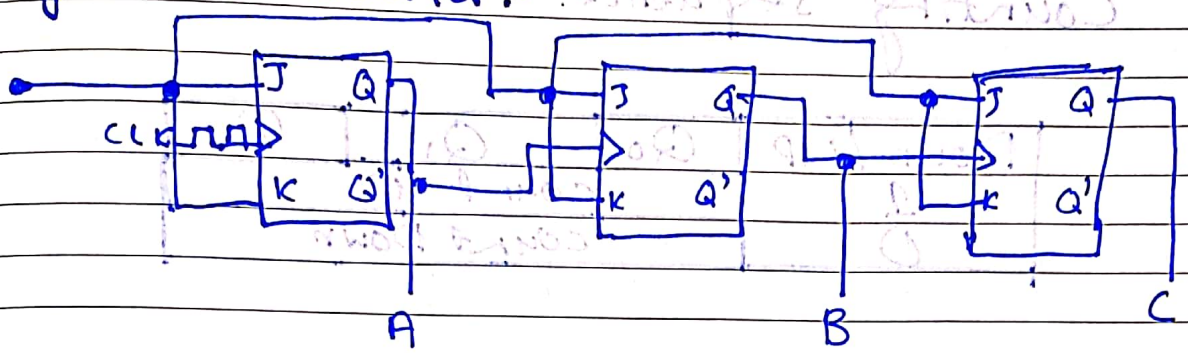
LAB 14 Manual

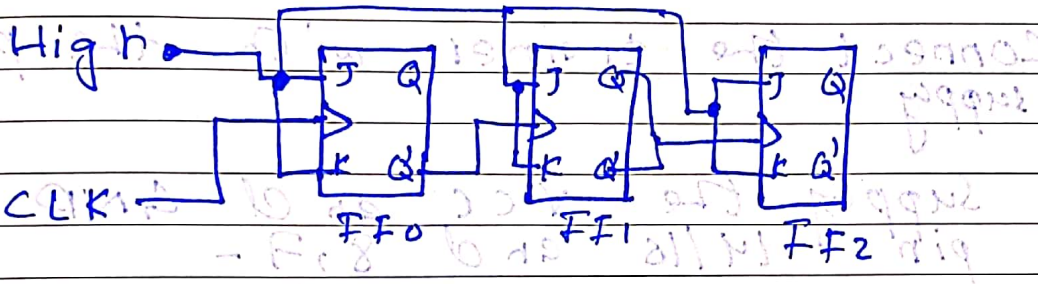
Counters:-

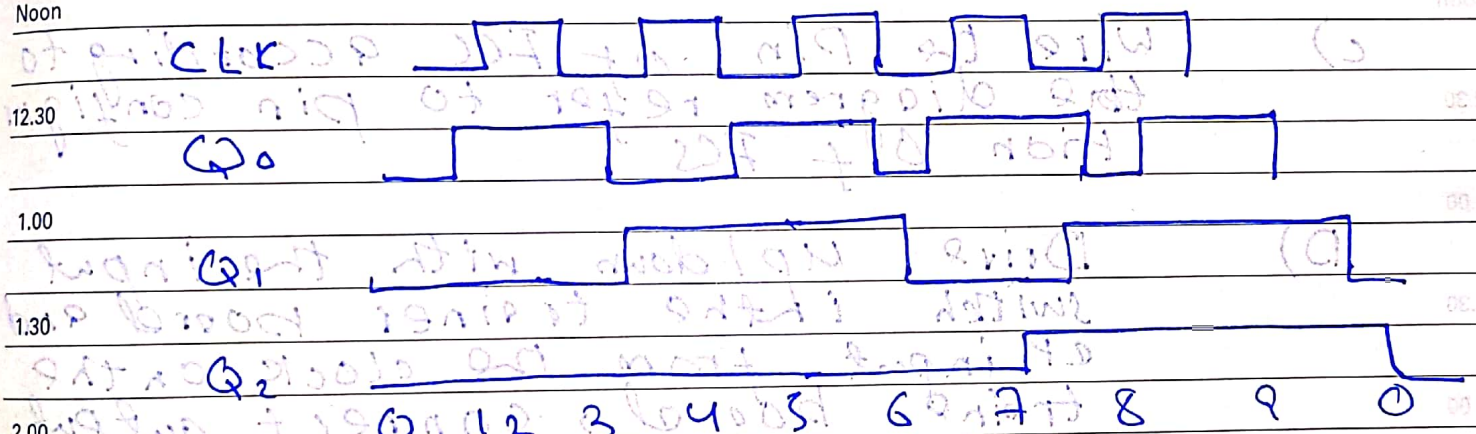
A registers that goes through or prescribed sequence of states upon the application of input pulses is called a counter and they may occur at fixed intervals ~~of the sequence~~ time or random intervals - The sequence of states may follow the binary number sequence or any other sequence of states - A counter that follow the binary number sequence is called binary counter. Counters are available in two categories: ripple counter and synchronous counters - In ripple counter the flipflop output transition series as a source for triggering other flip flops In other words, the clock inputs of some or all of the flipflop are triggered not by the are triggered not by the common clock pulses but rather by the transition that occurs in other flip flop outputs - In synchronous counters the clock inputs of all the flipflops recieve the common clock pulse and the change of state is determined by the present state of the counter-



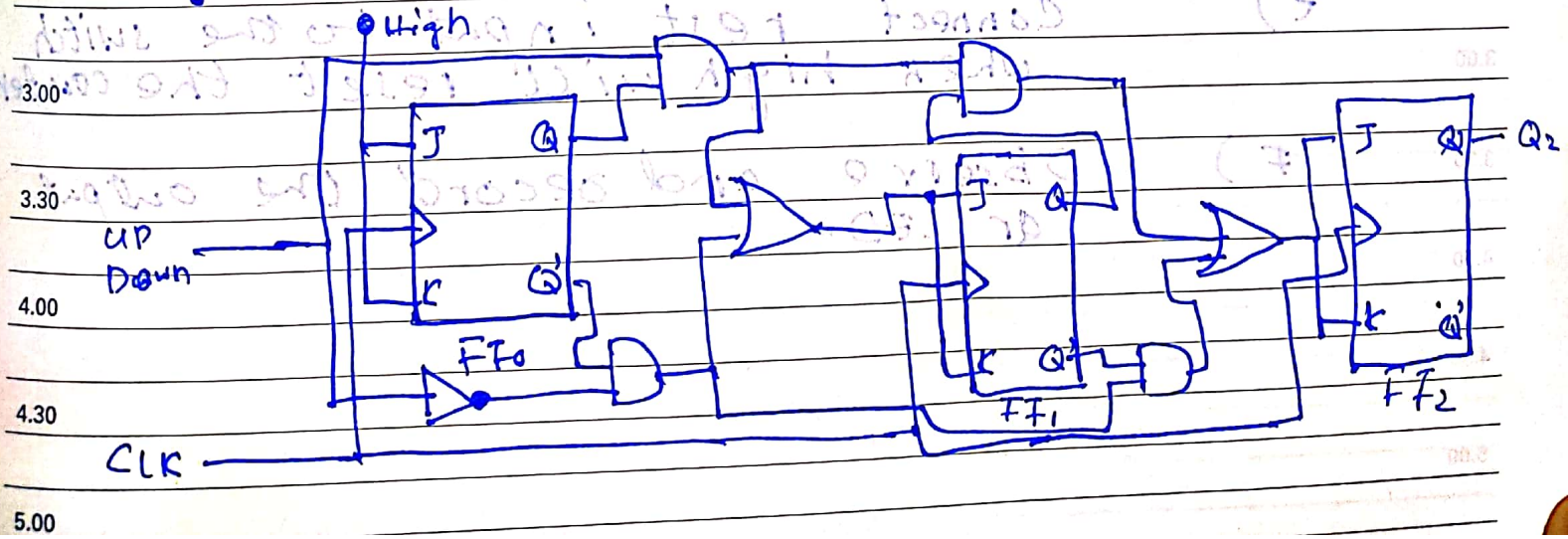
Asynchrono Counter:-







Syn chrono: Counter



Counting Sequence:

Down/UP	Q_0	Q_1	Q_2
1	count up		
0	count down		

Procedure:

a) Connect the trainer with the power suppy

b) Supply the Vcc and GND in the pin 14/16 and 8,7 -

c) Wire the Pin of FCC according to the diagrem refer to pin configuration of FCS

D) Drive up/down with the input switch in the trainer board and cp input from the clock on the train board, connect output Q's to led.

e) Connect rest input to the switch when high will reset the counter

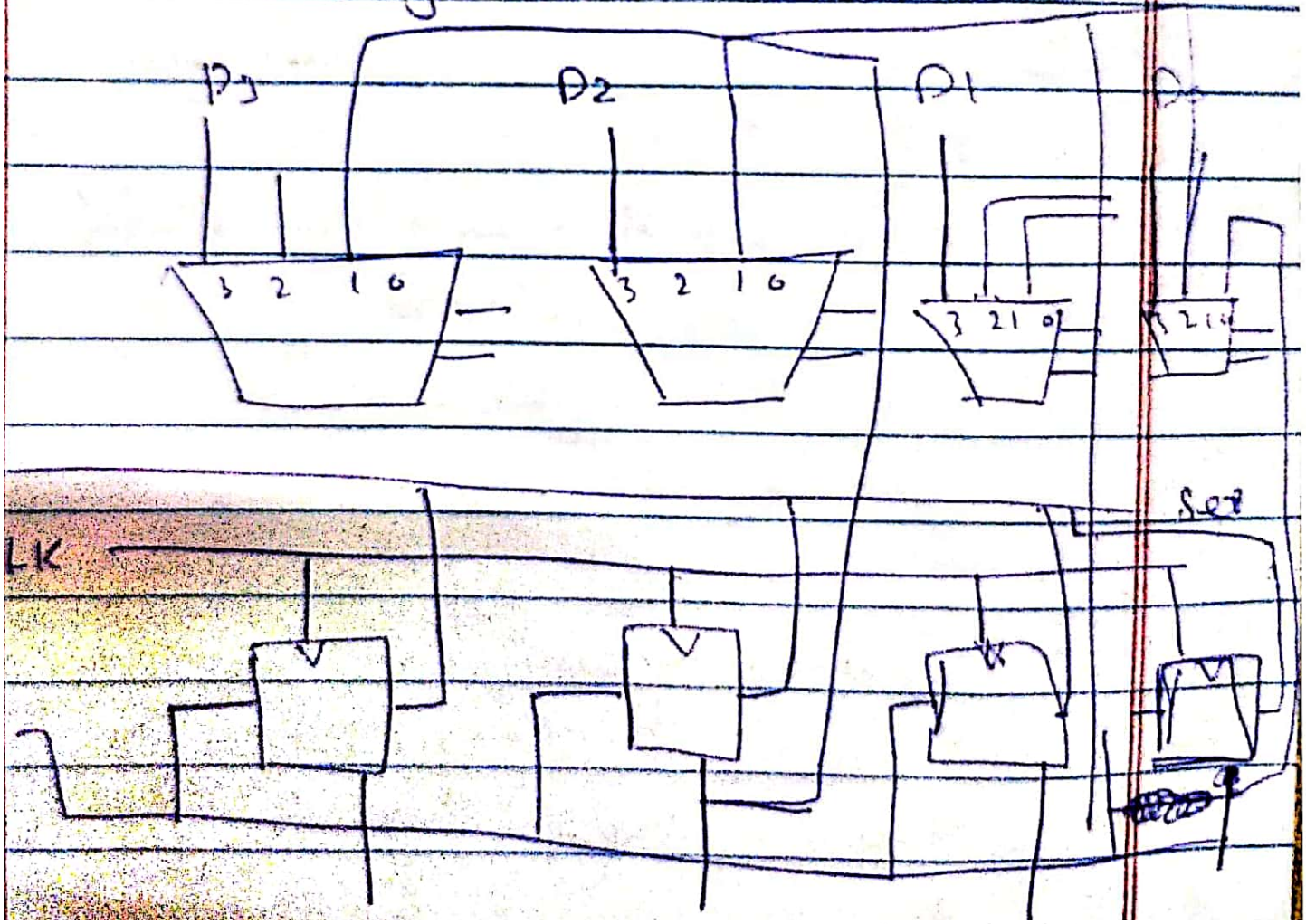
F) Observe and record the output or LED -

LAB 15

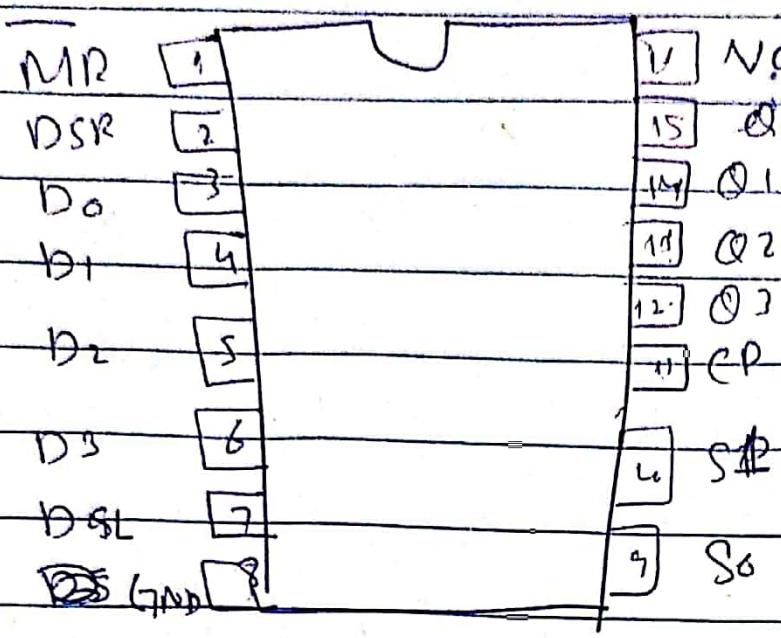
Background Theory:-

A register is used to store n bits of information where n is number of flipflops A register consist of a set of flip flops, together with gates that performs data processing tasks The flip flop hold data and the gates determine the new or transformed data to be transferred into the flip flops. The registers have two types, one simple register and other register with parralled loads. The register with parallel load is the register in which we can easily store the value of our own choice. The ability of register is controlled by a control input, If control input is 1 then the data which store in the register remain store in the register. Another type of register is known as Shift register

The shift register is capable of shifting its stored bit laterally in one or both direction. The logical configuration of a shift register consists of a chain of flip flops in cascade, with the output of one flip flop connected to the input of the next flip flop. All flip flop receives a common clock pulse which activates the shift from each stage to the next.



UNIVERSAL Shift Register



Characteristic Table

S1	S0	Operation
0	0	No change
0	1	Shift right
1	0	Shift left
1	1	Parallel load

Parallel load Operation

S1	S0	D0 D1 D2 D3	Q0 Q1 Q2 Q3
0	0		
0	1		
1	0		
1	1		

Procedure:

Connect the trainer with power supply. For clock, connect function generator with the power supply. Keep frequency knob on minimum, press the button for function of square wave and keep the frequency range on minimum rotate the amplitude knob to max and get the output from it

Connect the red elegator clip with the CP pin of the IC and ground the back elegator clip.

Mount the IC 74LS194 on the trainer board.

Supply the VCC and GND to the pin 16 and 8 respectively.

Wire the pins of IC, refer to the pin configuration

Drive the D_3, D_{SR}, D_{SL}, S_0, S_1 inputs with input switches on the trainer board. and CP input from the clock on the trainer board

Connect the master Qs to the LED