EXPERIMENT NUMBER – 36 :–

TITLE :– Implement a 4-bit Asynchronous counter using 4013 IC.

OBJECTIVE :– Implement a 4-bit Asynchronous counter using D-Flip Flop IC (4013 IC).

APPARATUS REQUIRED :–

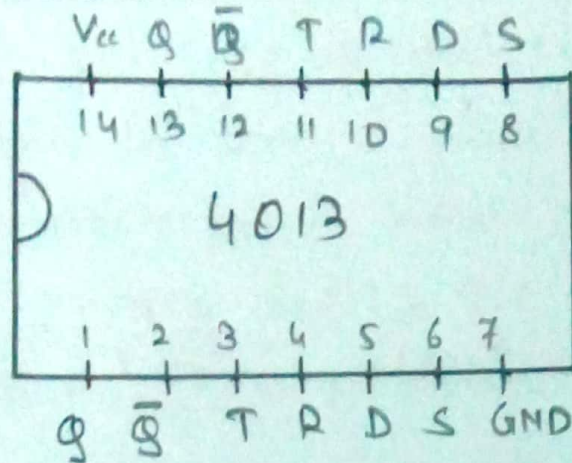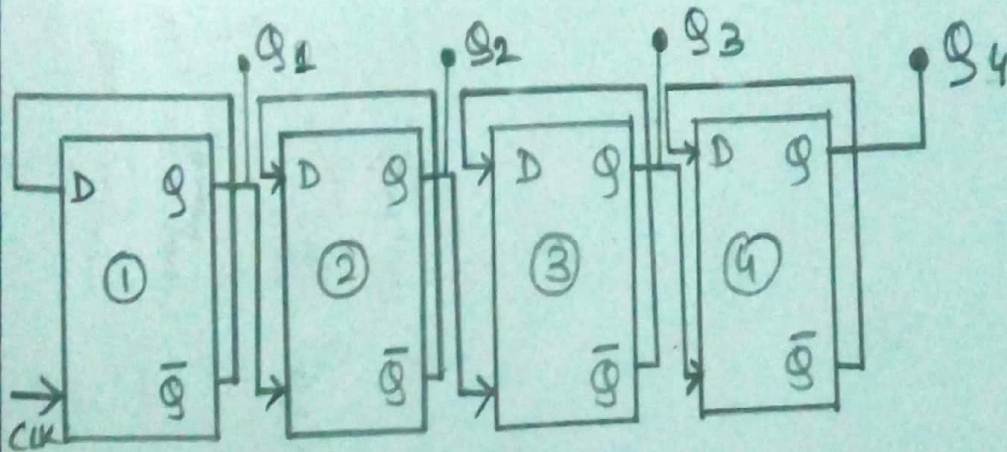| Sl. No.	Component's Name	Specification	QTY
1	D-Flip Flop IC	4013	2
2	Trainer Kit	–	1
3	Wires	–	1 bunch

THEORY :–

In a asynchronous counter, the flip-flop output transition serves as a source for triggering other flip flop. In other words, the count pulse inputs of all flip-flop (except first) are triggered not by the incoming pulses but rather by the transition that occurs in the other flip flop. It is also called ripple counters.

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PIN CONFIGURATION :—

Vcc Q $\bar{Q}$ T R D S

| 14 | 13 | 12 | 11 | 10 | 9 | 8 |

4013

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Q $\bar{Q}$ T R D S GND

CIRCUIT DIAGRAM :—

Q_1 Q_2 Q_3 Q_4

OBSERVATION TABLE :—

Clock	Counter Output		State number	Decimal Counter Output
	Q_1	Q_2		
Initially	0	0	—	0
1	0	1	1	1
2	1	0	2	2
3	1	1	3	3
4	0	0	4	0.

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CONCLUSION:—

With the help of this experiment, we came to know about asynchronous counter and how we can construct it using 4013 Ic or D-flip flop Ic.

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