

## Experiment No: 13

Name: D-latch

Aim: construct, test and investigate the operation of D-latch.

Objective: to study the construction and the working of D-latch

Components: Bread board / kit, 7404

Theory:

D-latch: This latch has only 2 inputs. D (data) and En (enable). The D input goes directly to the S input, and its complement is applied to the R input. As long as the enable input is at 0, the cross-coupled OR-latch has both inputs at the 1 levels and the circuit cannot change states regardless of the value of D.

~~Output~~ The <sup>D</sup>input is sampled when  $En = 1$ . If  $D = 1$ , the output goes to 1, placing the circuit into the <sup>set</sup> state. If  $D = 0$ , output Q goes to 0, placing the circuit in the reset state. The D-latch receives the designation from its ability to hold data in its internal storage.

Procedure:

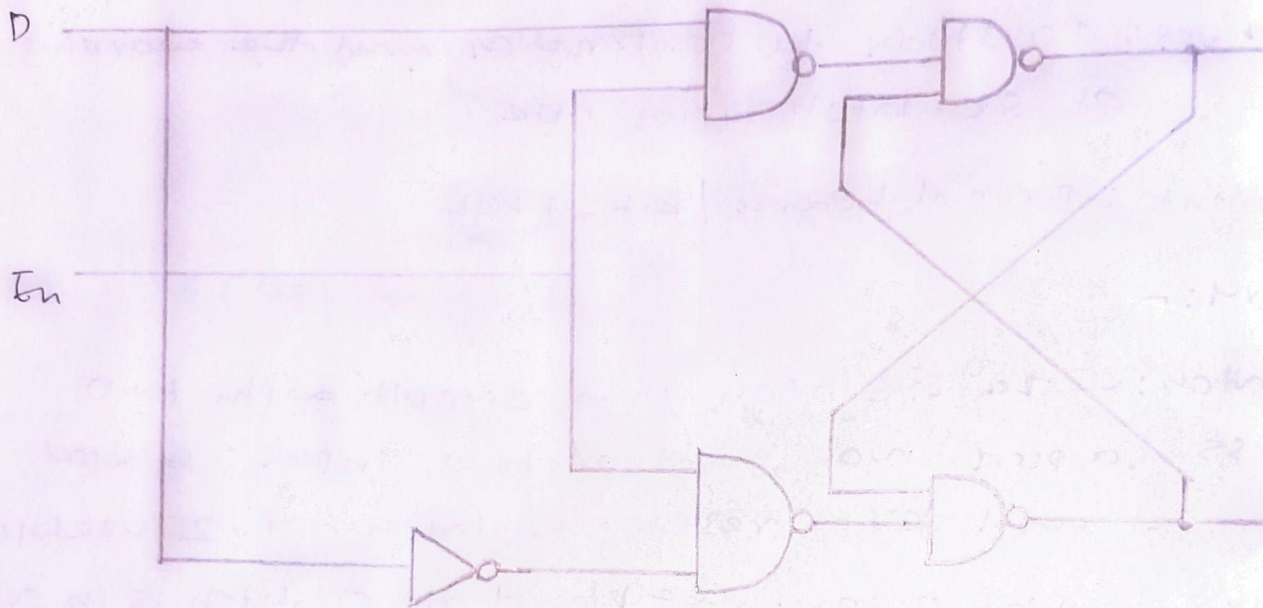
1. constructions are made as per the circuit diagrams
2. Switch on the power supply
3. Apply different combinations of inputs and observe the output with the truth table

Result

Different logic circuits are constructed and their truth tables are verified

## Circuit diagram

D-latch



Truth table

En	D	next state of Q
0	x	no change
1	0	Q = 0 ; reset state
1	1	Q = 1 ; Set state