How to Write Lab Experiments in Digital Electronics

There are two types of sheets in Lab file – Ruled sheets and white sheets

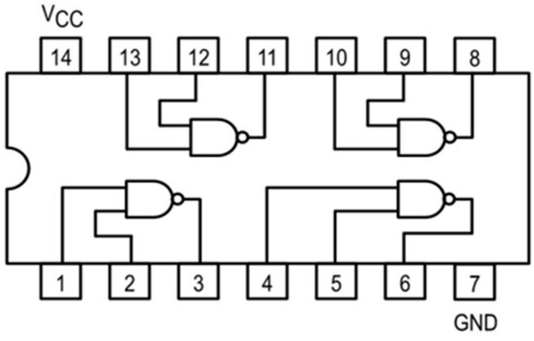
On ruled sheets we have to write these 4 points

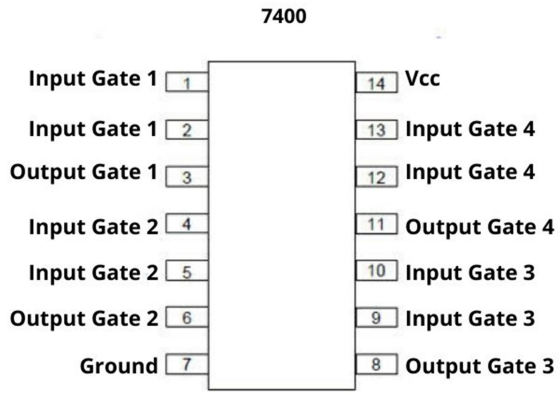
1. **Name of Experiment:** Verification of Truth Table of all Logic Gates.
2. **ICs Required:**
   7400 – NAND Gate
   7402 – NOT Gate
   And So on…
3. **Theory and Expected Truth Table:**
   AND Gate: For a two input AND gate, output is high (1) only if both the inputs are high (1), otherwise output is low (0).
   Boolean Expression for AND gate is Y= A.B
   Truth Table of AND Gate with inputs A & B and output Y is tabulated below:

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

   Do the same for all six gates….
4. **Observations:** Truth tables for all the gates have been verified.
   = = = = = =
   On white sheets, we have to draw two diagrams and write the details of wiring on Digital Board

1. **PIN Diagram of all the ICs used in the experiment.**
   Pin Diagram of NAND GATE IC (7400) :
   For same IC, we may find PIN Diagrams which are looking different, but all of them will give us same information. Two diagrams for 7400 are given below. You can use any PIN Diagram or can make a new one taking relevant information from both.





Similarly, we have to draw PIN Diagram of all the six ICs used in this experiment.

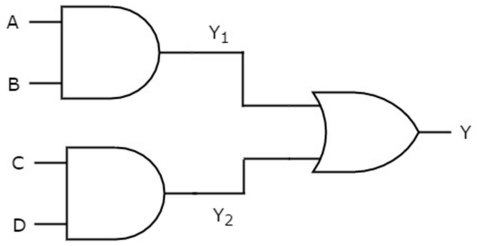
2. **Logic Diagram for the truth table of the experiment**
   In this experiment, logic diagram is very easy as we only have to draw a single gate.
   For NAND gate, Logic Diagram is

   Later on, we will have expressions like Y= AB+CD and we may have to use multiple gates.

3. **Connections on the Digital Board and ICs used in the experiment.**
   [Along with the details of Inputs, Outputs, and Intermediate wirings of Logic diagram, we need to write all other connections like Ground, Supply Voltage, etc.**]**

   A - Wire connected between inputs port 1 and PIN number 1 of IC 7400
   B - Wire connected between input port 2 and PIN number 2 of IC 7400
   Y - Wire connected between PIN number 3 of IC and Output port 1
   Other PIN Connections
   PIN 7 – Connected to Ground
   PIN 14 – Connected to Supply Voltage

   For the expression Y= AB+CD, Logic diagram will be



Wiring details for this circuit will be as follows
A - Wire connected between input port 1 and PIN number 1 of IC 7408
B - Wire connected between input port 2 and PIN number 2 of IC 7408
C - Wire connected between input port 3 and PIN number 4 of IC 7408
D - Wire connected between input port 4 and PIN number 5 of IC 7408
Y1- Wire connected between PIN Number 3 of IC 7408 and PIN Number 1 of IC 7432
Y2- Wire connected between PIN Number 6 of IC 7408 and PIN Number 2 of IC 7432
Y- Wire connected between PIN number 3 of IC 7432 and Output port 1

Other PIN Connections
PIN 7 of IC 7408 – Connected to Ground
PIN 14 of IC 7408 – Connected to Supply Voltage
PIN 7 of IC 7432 – Connected to PIN number 7 of 7408 (Indirectly connected to Ground)
PIN 14 of IC 7432 – Connected to PIN number 14 of 7408 (Indirectly connected to Supply)

We will follow the same pattern for all the labs of Digital Electronics.