

Experiment # 1: Familiarization with Fundamental Logic Gates

Objective:

- To get familiarized with fundamental logic gates and demonstrate the input-output relationship of 2-input **AND** (IC – 7408), **OR** (IC – 7432) and **NOT/Inverter** (IC – 7404) gates by constructing their truth tables.
- To get familiar with other logic gates like **NAND** (IC – 7400), **NOR** (IC – 7402), **XOR** (IC – 7486) and **XNOR** (IC – 4077)

Required Components:

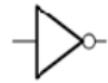
1. IC 7408 × 1
2. IC 7432 x 1
3. IC 7404 × 1
4. IC 7400 x 1
5. IC 7402 × 1
6. IC 7486 x 1
7. IC 4077 x 1

Procedure:

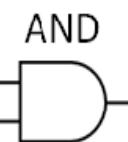
- For each of the ICs, place the IC correctly on the trainer board
- Remember to connect each IC's VCC pin to the “+5V” position of the DC Power Supply of the trainer board, and the GND or 0V pin to the “GND” position of the trainer board.
- Connect the inputs to the data switches and the output to any position on the LED display.
- Find out the outputs for all possible combinations of input states.
- Write down the input-output in tabular form.

Logic gate symbols with corresponding truth tables:

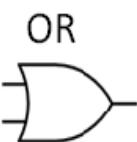
NOT



INPUT	OUTPUT
A	
0	1
1	0



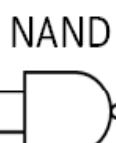
INPUT		OUTPUT
A	B	
0	0	0
1	0	0
0	1	0
1	1	1



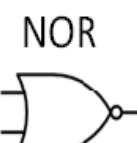
INPUT		OUTPUT
A	B	
0	0	0
1	0	1
0	1	1
1	1	1



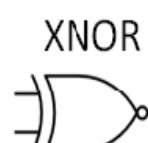
INPUT		OUTPUT
A	B	
0	0	0
1	0	1
0	1	1
1	1	0



INPUT		OUTPUT
A	B	
0	0	1
1	0	1
0	1	1
1	1	0



INPUT		OUTPUT
A	B	
0	0	1
1	0	0
0	1	0
1	1	0



INPUT		OUTPUT
A	B	
0	0	1
1	0	0
0	1	0
1	1	1

Pin Diagrams of ICs:

