Experiment No. 1
Truth table of various logic gates using ICs.
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Date of Performance:
Date of Submission:

Aim - To verify the truth table of various logic gates using ICs.

Objective -

1. Understand how to use the breadboard to patch up, test your logic design and debug it.
2. The principal objective of this experiment is to fully understand the function and use of logic gates.
3. Understand how to implement simple circuits based on a schematic diagram using logic gates.

Components required -

1. IC's 7408, 7432, 7404
2. Bread Board.
3. Connecting wires.

Theory -

In digital electronics, a gate is logic circuits with one output and one or more inputs. Logic gates are available as integrated circuits.

AND gate :

AND gate performs logical multiplication, more commonly known as AND operation. The AND gate output will be in high state only when all the inputs are in high state.7408 is a Quad 2 input AND gate.

OR gate:

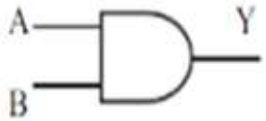
It performs logical addition. Its output become high if any of the inputs is in logic high. 7432 is a Quad 2 input OR gate.

NOT gate:

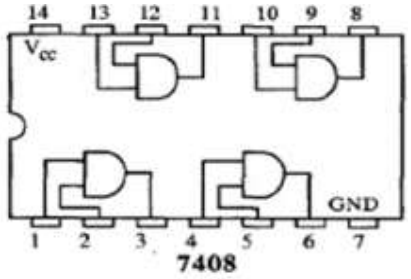
It performs basic logic function for inversion or complementation. The purpose of the inverter is to change one logic level to the opposite level. IC 7404 is a Hex inverter.

Circuit Diagram, Truth Table -

AND Gate -

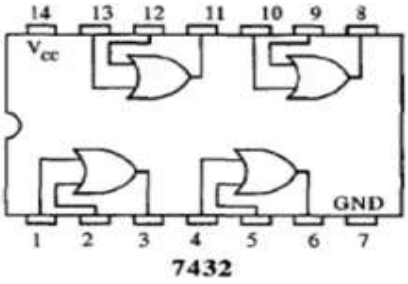


A	B	Y(A.B)
0	0	0
0	1	0
1	0	0
1	1	1

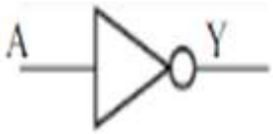


OR Gate -

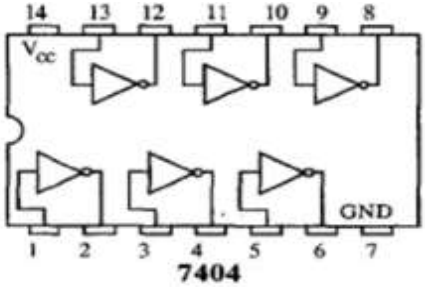
A	B	Y(A+B)
0	0	0
0	1	1
1	0	1
1	1	1



NOT Gate -



A	Y=A'
0	1
1	0



Procedure:

1.Test all the components in the Ic packages using a digital IC tester. Also assure whether all the connecting wires are in good condition by testing for the continuity using a Multimeter or a trainer kit.

2.Verify the dual in line package (DIP) inout of the IC before feeding the inputs.

3.Set up the circuits and observe the outputs.

Conclusion - In this experiment, our objective was to demonstrate the operation of logic gates in processing binary input signals to generate predefined output states, as defined in their respective truth tables. We accomplished this by harnessing the inherent logical functions of various gate types, such as AND, OR, NOT, NAND, NOR, and XOR gates. This hands-on approach afforded us a tangible comprehension of fundamental digital logic principles and further solidified the connection between logical operations and the resultant outputs. This knowledge is essential for the continued exploration and practical application of digital electronics within the field.