Digital Logic Design Lab Report

Experiment No: 01

Experiment Name: Implementation of Basic Logic Gates(AND,OR,NOT)

Submitted By:

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Experiment NO- 01

Experiment Name: Implementation of Basic Logic Gates (AND, OR, NOT).

- Objective -

The objective of this experiment is to design and implement basic logic gates (AND, OR, NOT) using digital components and verify their functionality by constructing circuits and analysing their truth table.

- Theory -

Logic Gates are fundamental building blocks of digital circuits. They perform basic logic functions that are essential for digital computations.

- AND Gate –

The AND gate is a digital logic with 'n' i/ps one o/p which perform logical conjunction based on the combinations of its inputs. The output of its gate is true only when all the inputs are true. When one or more inputs are false, then only the output is false. The boolean expression for an AND gate is :

$$Y = A \cdot B'$$

- OR Gate –

The output of the OR gate is true only when one or more inputs are true. If all the inputs are false, then the output is false. The boolean expression for an OR gate is:

$$Y = A + B$$

- NOT Gate -

The NOT gate is a digital logic gate with one input and one output that operators ean inverter operation of the input. The output of the NOT gate is the reverse of input. When the input of the NOT gate is true then the output will be false and vice versa. The boolean expression for a NOT gate is:

$$Y = \bar{A}$$

- Circuit Diagram -

AND Gate -

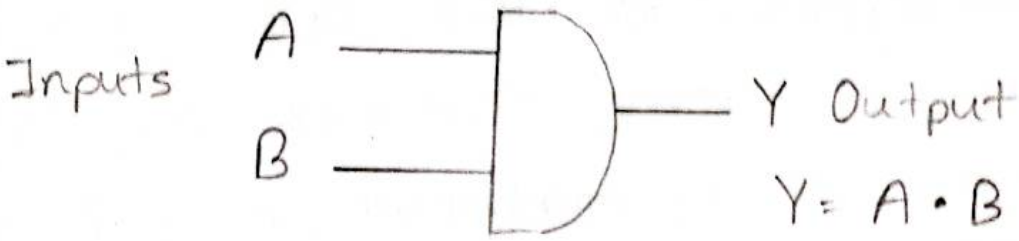


Figure-01: AND Gate

OR Gate –

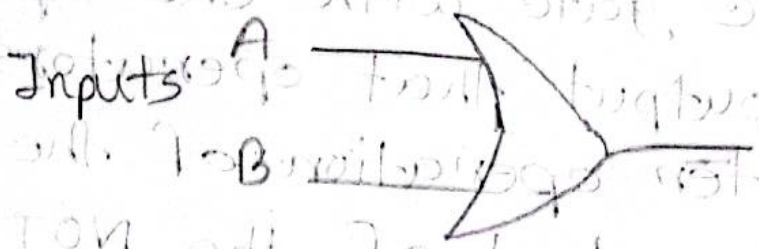


Figure-02: OR Gate

NOT Gate –

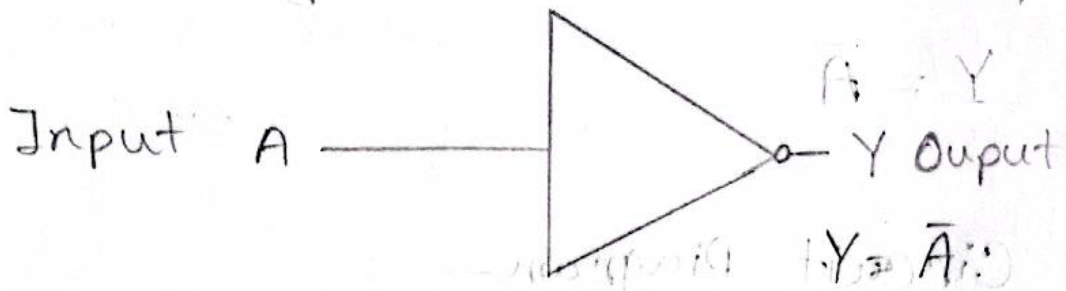


Figure-03: NOT Gate

• Truth table –

AND Gate :

A	B	A·B
0	0	0
0	1	0
1	0	0
1	1	1

OR Gate :

A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

NOT Gate :

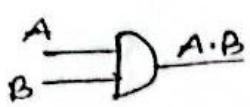
A	$\bar{A}$
0	1
1	0

• Discussion – The experiment verified the working principles of AND, OR and NOT gate. When me and group members work to do for this experiment we didn't face any critical problem. We understood the experiment easily.

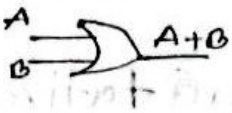
10-2-25

Exp NO - 01

Exp Name - Implementation of Basic Logic ~~Code~~ Gate ~~(AND~~ (AND, OR, NOT)

AND: 

7408

OR: 

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NOT: 

7404

Truth Table

T.T

A	B	A·B
0	0	0
0	1	0
1	0	0
1	1	1

T.T

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

T.T

A	Ā
0	1
1	0