Lab File

On

Digital Electronics And Computer Organisation

Submitted To

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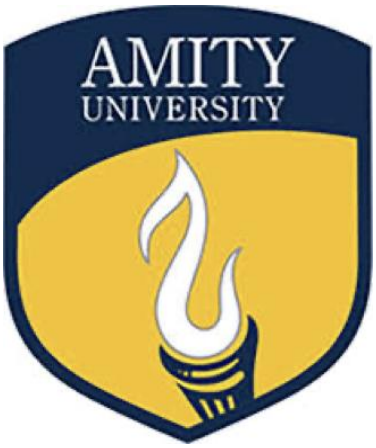
Amity University Uttar Pradesh



In partial fulfilment of the requirements for the award degree of

Bachelor of Technology

In

Artificial Intelligence

by

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Experiment Number: 1

AIM: Verification and interpretation of truth tables for various logical gates.

PLATFORM/TOOLS USED:

1. Virtual Lab
2. circuitverse.org

THEORY:

Logic gates are the basic building blocks of any digital system. Logic gates are electronic circuits having one or more than one input and only one output. The relationship between the input and the output is based on a certain logic. Based on this, logic gates are named as

a. AND gate
b. OR gate
c. NOT gate
d. NAND gate
e. NOR gate
f. Ex-OR gate
g. Ex-NOR gate

1. AND gate:

Truth table

A	B	Y=A.B
0	0	0
0	1	0
1	0	0
1	1	1

KMAP

A\B	0	1
0	0	0
1	0	1

Expression: Y=A.B

Symbol:

IC No: 7408

2. OR gate:

Truth table

A	B	Y=A+B
0	0	0
0	1	1

1	0	1
1	1	1

KMap

A\B	0	1
0	0	1
1	1	1

Expression: Y=A+B
Symbol:

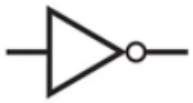
IC No: 7432

3. **NOT gate**:

Truth table

A	Y
0	1
1	0

Expression: Y=A+B
Symbol:



IC No: 7404

4. NAND gate:

Truth table

A	B	Y=(AB)’
0	0	1
0	1	1
1	0	1
1	1	0

KMap

A\B	0	1
0	1	1
1	1	0

Expression: Y=(AB)’
Symbol:

IC No: 7400

5. NOR gate:

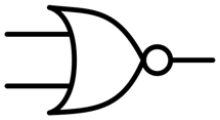
Truth table

A	B	Y=(A+B)’
0	0	1
0	1	0
1	0	0
1	1	0

KMap

A\B	0	1
0	1	0
1	0	0

Expression: Y=(A+B)’
Symbol:



IC No: 7402

6. XOR gate

Truth table

A	B	Y=A.B
0	0	0

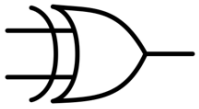
0	1	1
1	0	1
1	1	0

KMap

A\B	0	1
0	0	1
1	1	0

Expression: Y=A XOR B

Symbol:



IC No: 7486

7. XNOR gate

Truth table

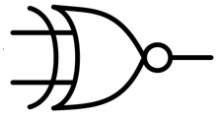
A	B	Y=A.B
0	0	1
0	1	0
1	0	0
1	1	1

KMap

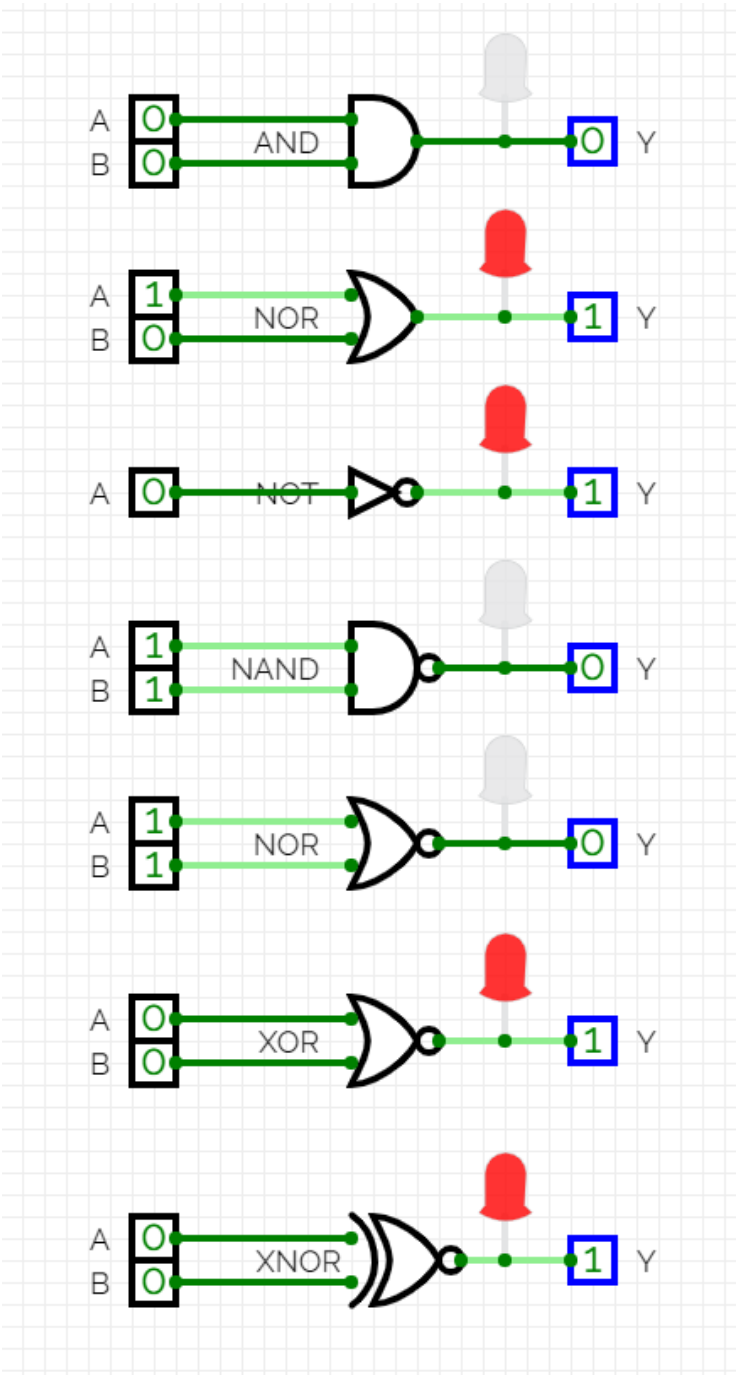
A\B	0	1
0	1	0
1	0	1

Expression: Y=A XNOR B

Symbol:



RESULT:



CONCLUSIONS: The logic and universal gates' truth tables are verified.

CRITERIA	TOTAL MARKS	MARKS OBTAINED	COMMENTS
Concept (A)	2		
Implementation (B)	2		
Performance (C)	2		
TOTAL	6		