



BAHRIA UNIVERSITY (KARACHI CAMPUS)

Computing Fundamentals (CSC - 110)

Assignment 02

Fall 2022

[CLO-3]

Class: BSE 1B

Course Instructor: ENGR. MAHAWISH

Date: 26 Nov 2022

Student Name: ABDULLAH

Shift: Morning

Submission: 2 Dec 2022

Marks: 05 Points

Registration #: 02131222099

Question no. 01 [5 Marks]

Perform the following logical operations justify through truth tables and draw circuit diagrams.

- (A AND B)
- NOT (A XOR B)
- NOT(A) OR NOT(B)
- C XOR (A OR B)
- {(A NAND B) XNOR (C AND D)}

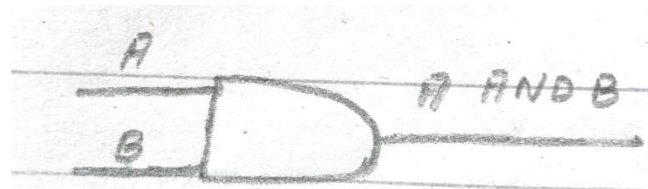
Solution:

- **(A AND B):**

Truth Table:

Input A	Input B	Output A AND B
0	0	0
1	0	0
0	1	0
1	1	1

Circuit Diagram:



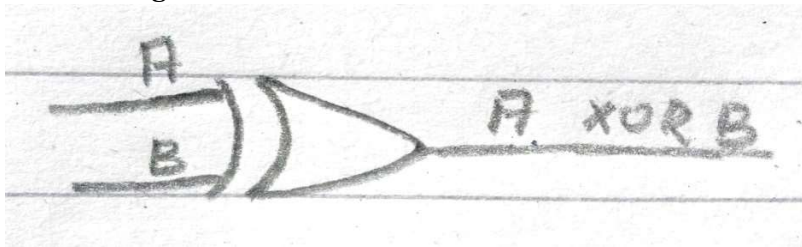
- **NOT (A XOR B):**

For A XOR B

Truth Table:

<i>Input A</i>	<i>Input B</i>	<i>Output A XOR B</i>
0	0	0
1	0	1
0	1	1
1	1	0

Circuit Diagram:

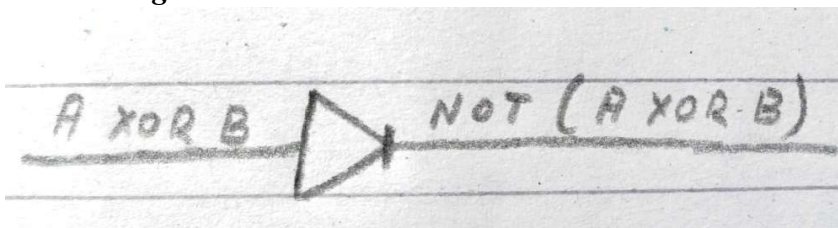


Now For NOT (A XOR B)

Truth Table:

<i>Input (A XOR B)</i>	<i>Output NOT (A XOR B)</i>
0	1
1	0
1	0
0	1

Circuit Diagram:



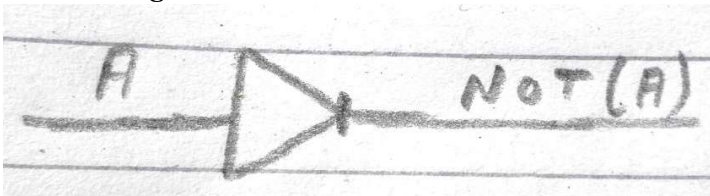
- **NOT(A) OR NOT(B):**

For NOT (A)

Truth Table:

<i>Input (A)</i>	<i>Output NOT (A)</i>
0	1
1	0

Circuit Diagram:

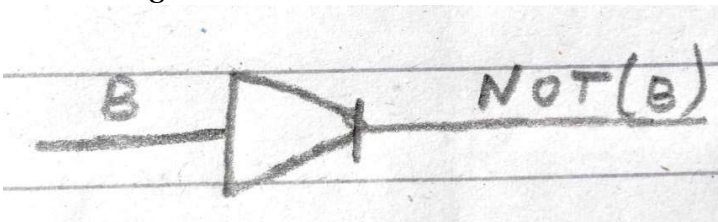


For NOT (B)

Truth Table:

<i>Input (B)</i>	<i>Output NOT (B)</i>
0	1
1	0

Circuit Diagram:

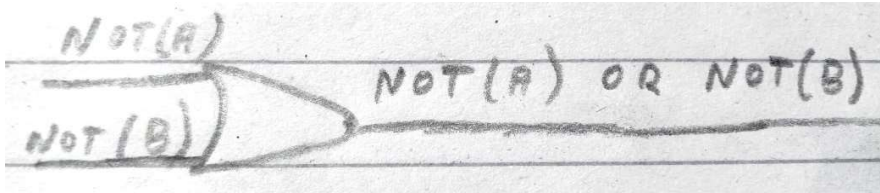


For NOT (A) OR NOT (B)

Truth Table:

<i>Input NOT (A)</i>	<i>Input NOT (B)</i>	<i>Output NOT (A) OR NOT (B)</i>
1	1	1
0	0	0

Circuit Diagram:



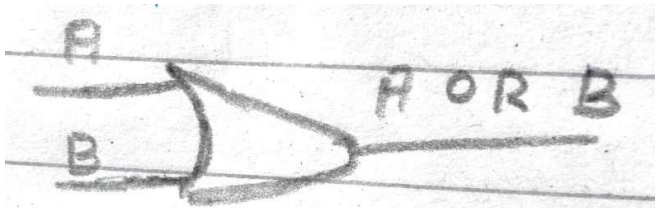
- **C XOR (A OR B):**

For (A OR B)

Truth Table:

<i>Input A</i>	<i>Input B</i>	<i>Output A OR B</i>
0	0	0
1	0	1
0	1	1
1	1	1

Circuit Diagram:

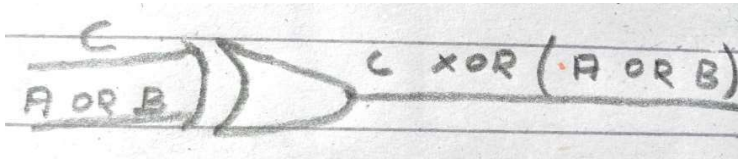


For C XOR (A OR B)

Truth Table:

<i>Input (A OR B)</i>	<i>Input C</i>	<i>Output C XOR (A OR B)</i>
0	0	0
1	1	0
1	0	1

Circuit Diagram:



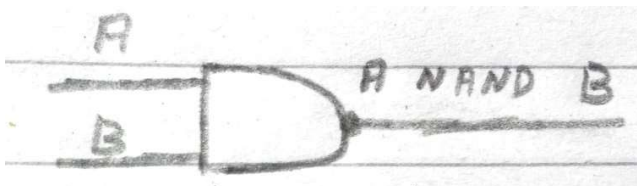
- **{(A NAND B) XNOR (C AND D)}:**

For (A NAND B)

Truth Table:

<i>Input A</i>	<i>Input B</i>	<i>Output A NAND B</i>
0	0	1
1	0	1
0	1	1
1	1	0

Circuit Diagram:

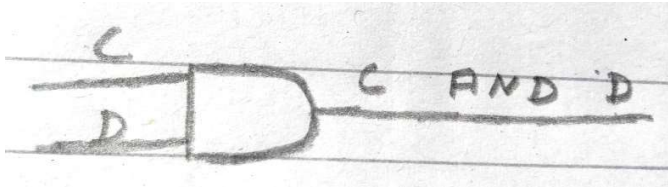


For (C AND D)

Truth Table:

<i>Input C</i>	<i>Input D</i>	<i>Output C AND D</i>
0	0	0
1	0	0
0	1	0
1	1	1

Circuit Diagram:



For $\{(A \text{ NAND } B) \text{ XNOR } (C \text{ AND } D)\}$

Truth Table:

<i>Input (A NAND B)</i>	<i>Input (C AND D)</i>	<i>Output $\{(A \text{ NAND } B) \text{ XNOR } (C \text{ AND } D)\}$</i>
1	0	0
1	0	0
1	0	0
0	1	0

Circuit Diagram:

