**Kinza Aftab**

**#015**

**BSCS 3**

**Digital logic design**

**8/3/2023**

**Practical 1:**

1: Which gates are categorized as universal gates and how they are used?

Ans: NAND and NOR gates are categorized as universal gates. They can implement any Boolean function without need to use any other gate.

2: Verify the Truth Table for AND Gate and OR Gate.

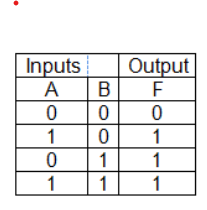
Ans:

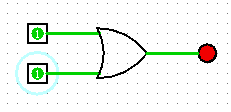
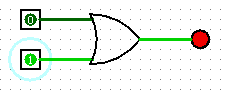
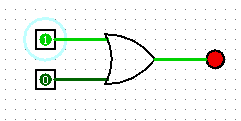
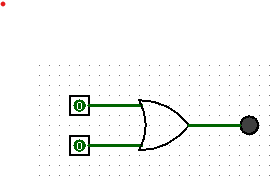
AND gate truth table:

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OR gate truth table:

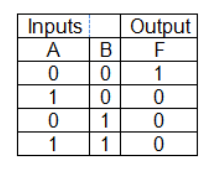




3. Verify the Truth Table for NOR Gate and NAND Gate.

Ans:

Truth table for NOR gate:

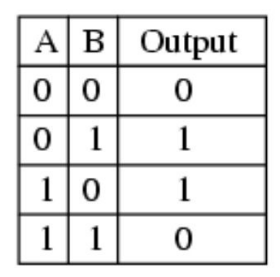


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| NAND gate truth table: |  |

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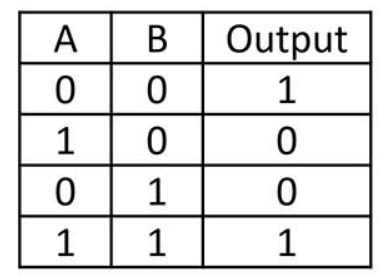
4. Verify the Truth Table for XOR Gate and XNOR Gate.

Truth table for XOR gate:



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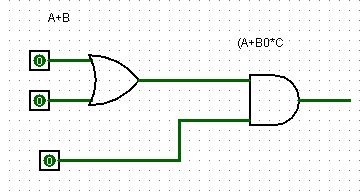
Truth table for XNOR gate:



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5. Convert the following logic gate circuit into a Boolean expression, writing Boolean sub-expressions next to each gate output in the diagram:

Ans: (A+B) \* C.



6. Draw the following function in Circuit maker.

i. F = 𝑿̅YZ + 𝑿̅Y𝒁̅ + XZ

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ii. F=𝑿̅Z + X𝒀̅Z +YZ’

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