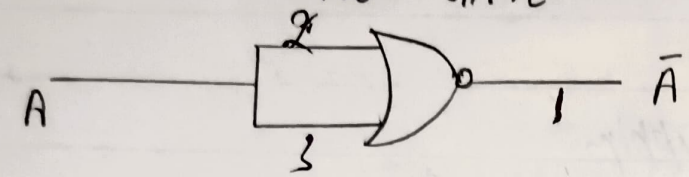
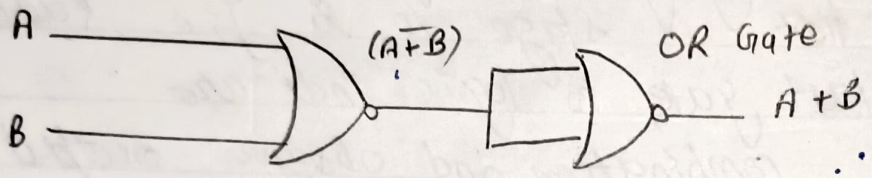
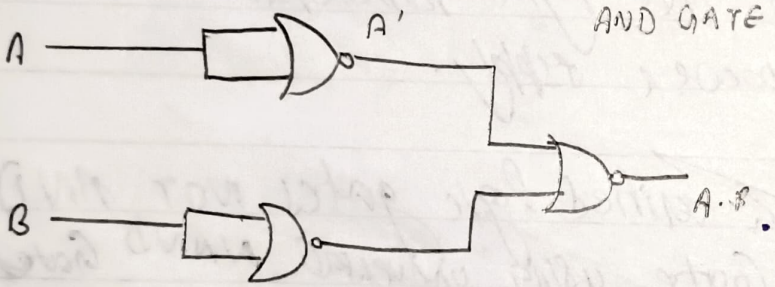
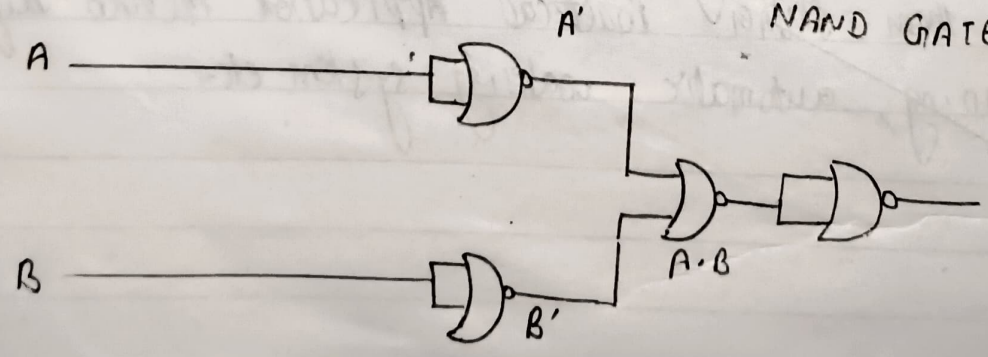
NOT GATE









Experiment-3

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Aim - Realization of all basic gates using NOR gate.

Apparatus Required → Bread Board, NOR Gates, Wires

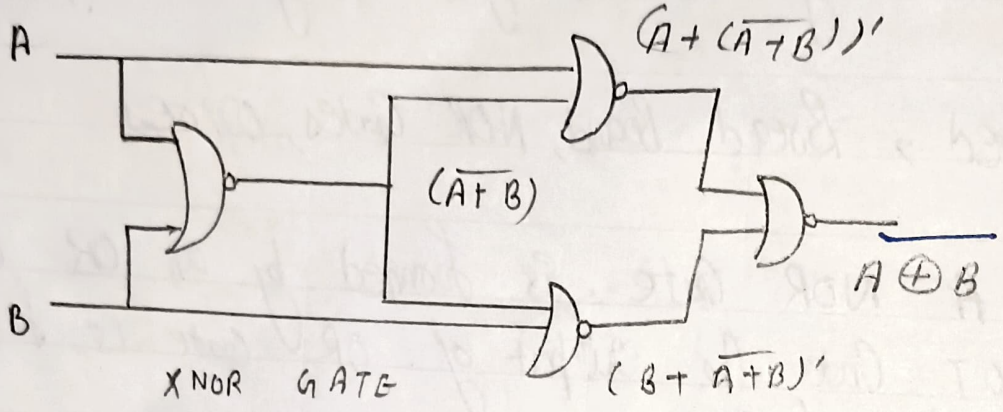
Theory → A NOR Gate is formed by an OR Gate followed by a NOT Gate. The output of OR Gate is fed as input to NOT Gate.

This Gate has minimum of two inputs, output is always one. We can realise all basic gate using NOR Gates.

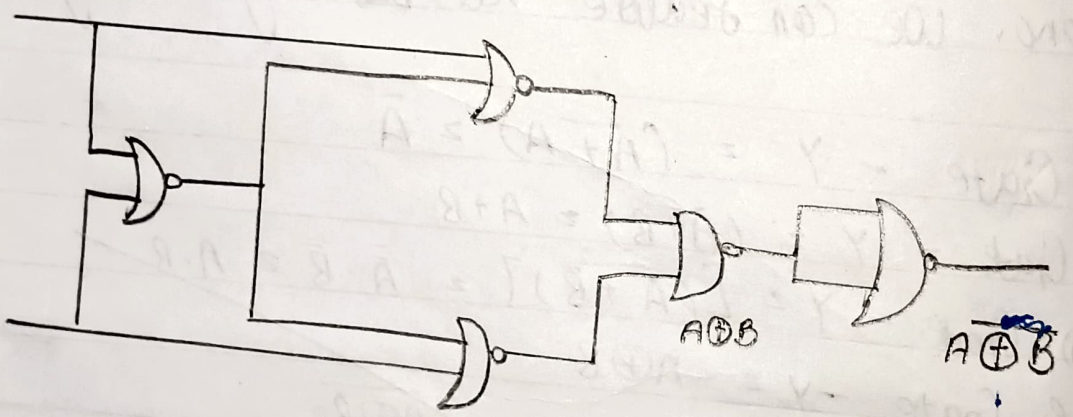
1) NOT Gate - $Y = (\overline{A+A}) = \bar{A}$
2) OR Gate - $Y = (\overline{A+B}) = A+B$
3) AND Gate - $Y = [(\overline{\bar{A}+\bar{B}})] = \bar{A}\cdot\bar{B} = A\cdot B$
4) X-OR Gate - $Y = A \oplus B$
5) X-NOR Gate - $Y = AB + \bar{B}\bar{A}$ or $\overline{A \oplus B}$
6) NAND Gate - $y = \overline{A\cdot B}$

Procedure

1) Connect the trainer kit to Power Supply
2) Connect the NOR Gate for any of the logic Equation to be satisfied.
3) Connect the input of first stage to logic source and output of last stage or gate to logic indicator
4) Apply various input combination & observe output for each type.


A
B
$(A+(\overline{A+B}))'$
$(\overline{A+B})$
$(B+\overline{A+B})'$
$A \oplus B$

XNOR GATE


$A \oplus B$
$\overline{A \oplus B}$

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5) Verify the truth table for each input-output combination
6) Repeat the process for all logic functions
7) Switch off AC supply.

Result :- We implemented & Verified logic gate NOT, AND, OR, NAND, XOR, XNOR using NOR gates.

Discussion - The boolean NOR function provides a single yet vital component of logic circuits, whether used as control give logic, DCB Minimization or routing simplification. The key applications include all phone, computing, STB, LCDTV Industrial Controllers etc.

27/9/24