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Q.1) Discuss the working of NAND gate with the help of Diagram & truth table.

Ans 2)

NAND Gate

The NAND gate is a special type of logic gate in the digital logic circuit. The NAND gate is the universal gate. it means all the basic gates such as AND, OR and NOT gate can be constructed using a NAND gate. The NAND gate is the combination of the NOT-AND gate.

The output state of the NAND gate will be Low only when all the inputs are high.

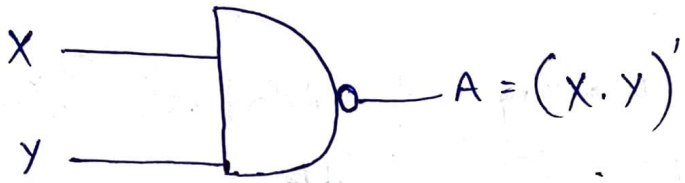
The NAND Gate Boolean Expression is given by,

$$A = (X \cdot Y)'$$

Here
X and Y are the inputs and A is the output

NAND logic gate can be acheived by multiplying all the inputs and then Complementing the multiplied result.

The NAND gate Symbol is Shown.



* NAND gate means "not AND gate", hence the output of this gate is just reverse of that of a similar AND gate.

Truth table of 2 input NAND gate

input		output
A	B	$X = \overline{A \cdot B}$
0	0	1
0	1	1
1	0	1
1	1	0

NAND Gate types

There are basically three types of NAND logic gates depending on the number of inputs.

2- input NAND, 3-input NAND

3- input NAND

The gate accepts three inputs and given single output the total possible combination of inputs are 8

The truth table of 3-input NAND

A	B	C	X
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0