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**1-** Discuss the working of Nand gate with the help of circuit diagram and truth table.
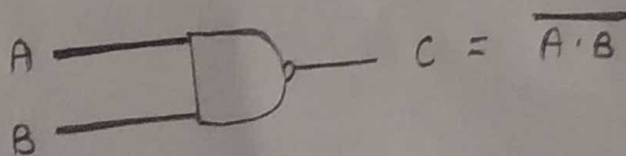
**Ans 1.**

<u>NAND<sub>x</sub> GATE →</u> A Nand gate ("not AND gate") is a logic gate that produces a low output (0) only if all its inputs are true, and high output (1) otherwise. Hence, the Nand gate is the inverse of an AND gate, and its circuit is produced by connecting an And gate to a Not gate.
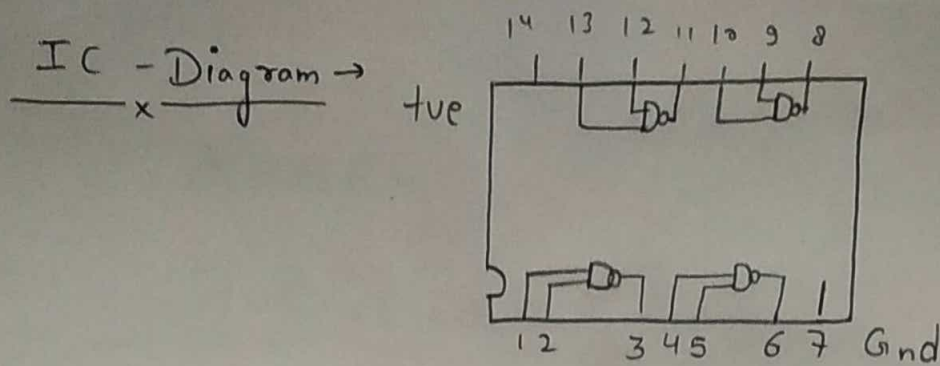
Just like an AND gate, a Nand gate may have any number of input probes but only one output probe.

NAND gates are also known as universal gates. The symbol of a Nand gate is similar to the And gate, but a bubble is drawn at the output point of the AND gate.

A —
B —
$C = \overline{A \cdot B}$

<u>symbol of Nand gate</u>

## IC - Diagram →



tve

14 13 12 11 10 9 8

12   3 45   6 7  Gnd

## truth table →

truth table of a 2 input Nand gate can be represented as,

| Inputs | | output |
|---|---|---|
| A | B | $X = \overline{A \cdot B}$ |
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

## Circuit Diagram →



A

B

And gate

A·B

Not gate

$\overline{A \cdot B}$