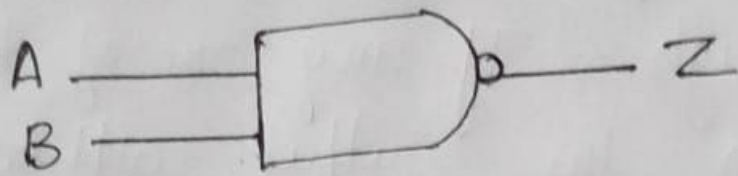


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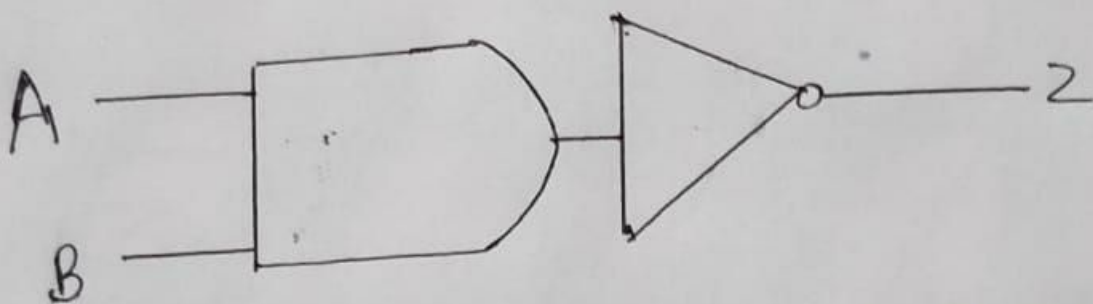
Q1. The NAND gate is a combination of an AND gate and NOT gate. They are connected in cascade form. It is also called Negated and gate. The NAND gate provides the false or low output only when their outputs is high or true. The ~~AND~~ NAND gate is essential because different types of a boolean functions are implemented by using it.

- ① The NAND gate has the property of functional completeness.
- ② The function completeness means any type of gates can be implemented by using the NAND gate.
- ③ It performs the function of OR, NOR and AND gate.

The logic symbol for the gates is shown below:-



The logic circuit of the NAND gate is shown below:



From the logic circuit, the output can be expressed as:

$$Z = \overline{A \cdot B}$$

The Truth Table:

A	B	Z
0	0	1
0	1	1
1	0	1
1	1	0

From the truth table of the gate, it is clear that all the inputs must be high to get a low output and

if any of the input is low, the output obtained will be high. If any one of the input is also high the output will be high that is 1.