

Fundamental Logic Gates

Truth Table

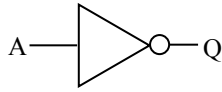
Circuit Representation

Boolean Expression

NOT Gate

A	Q
0	1
1	0

NOT Gate



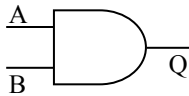
NOT Gate

$$Q = \bar{A}$$

AND Gate

A	B	Q
0	0	0
0	1	0
1	0	0
1	1	1

AND Gate



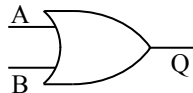
AND Gate

$$Q = A \& B = A \cdot B$$

OR Gate

A	B	Q
0	0	0
0	1	1
1	0	1
1	1	1

OR Gate



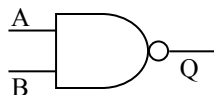
OR Gate

$$Q = A | B = A + B$$

NAND Gate

A	B	Q
0	0	1
0	1	1
1	0	1
1	1	0

NAND Gate



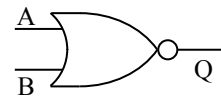
NAND Gate

$$Q = \overline{A \& B} = \overline{A \cdot B}$$

NOR Gate

A	B	Q
0	0	1
0	1	0
1	0	0
1	1	0

NOR Gate



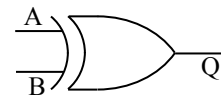
NOR Gate

$$Q = \overline{A | B} = \overline{A + B}$$

XOR Gate

A	B	Q
0	0	0
0	1	1
1	0	1
1	1	0

XOR Gate



XOR Gate

$$Q = A \wedge B = A \oplus B$$