unit V → logic gates -

1. AND
2. OR
3. NOT (Inverter)

Boolean functions -

$A = 0, 1$

$A + A = A$

$A \cdot A = A$

$A \cdot \bar{A} = 0$

$\bar{\bar{A}} = A$

$1 + A = 1$

Binary number System

→ Base - 2 (B-2) Binary

0
1

Decimal (B-10)

0
⋮
9

Boolean Algebra.

$0 + 0 = 0$

$0 + 1 = 1$

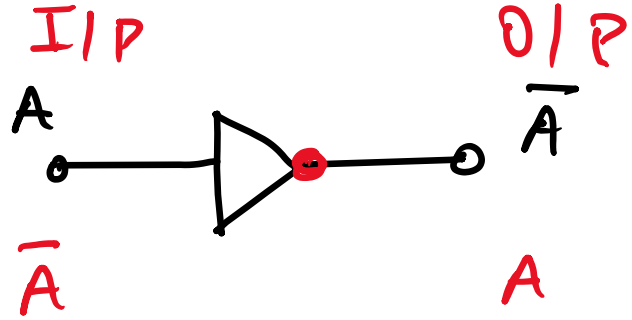
$1 + 0 = 1$

$1 \cdot 0 = 0$

$1 \cdot 1 = 1$

$1 + 1 = 1$

① NOT Gate - (Inverter)

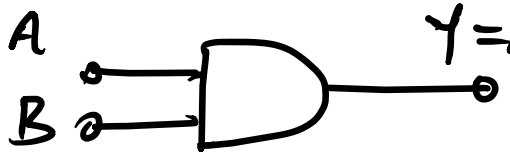


Truth table -

I/P	O/P
A	$\bar{A}$
0	1
1	0

→ Inverted O/P

② AND Gate -



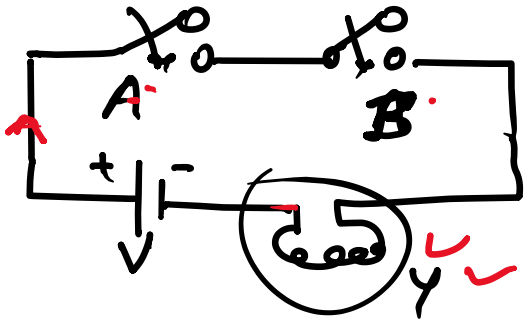
AB → Inputs

Y → O/P

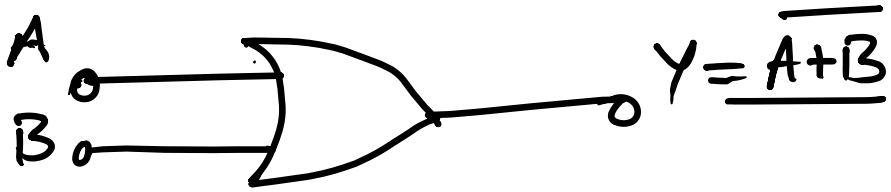
Truth table

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

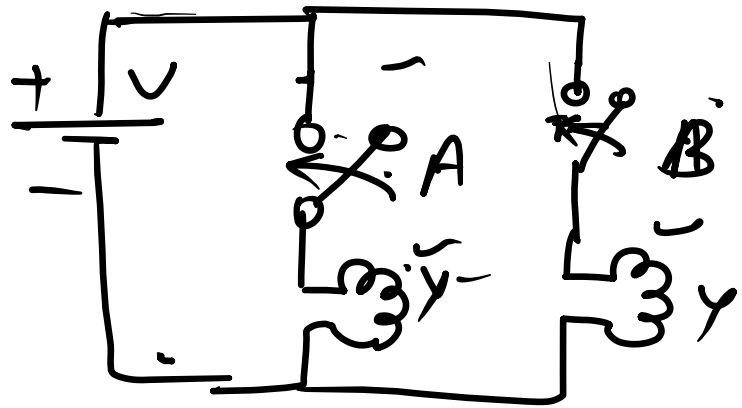
Circuit



(3) OR-Gate-



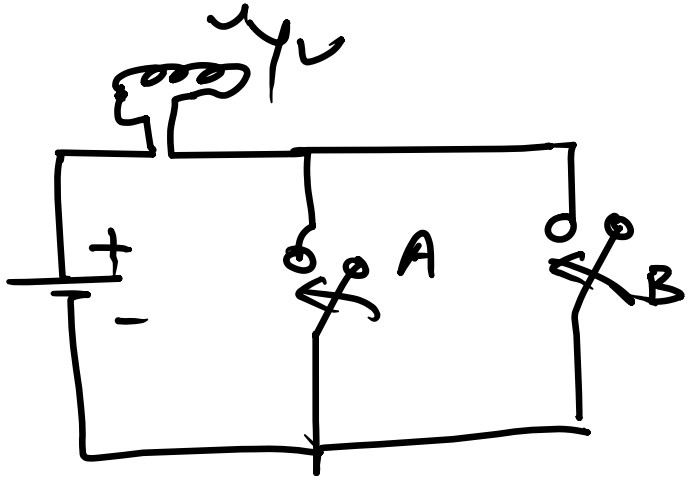
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1



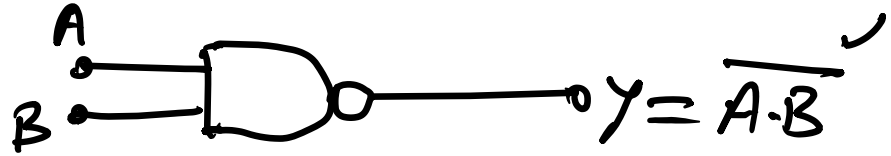
→ Universal Gates.

① NAND → AND + NOT

② NOR → OR + NOT

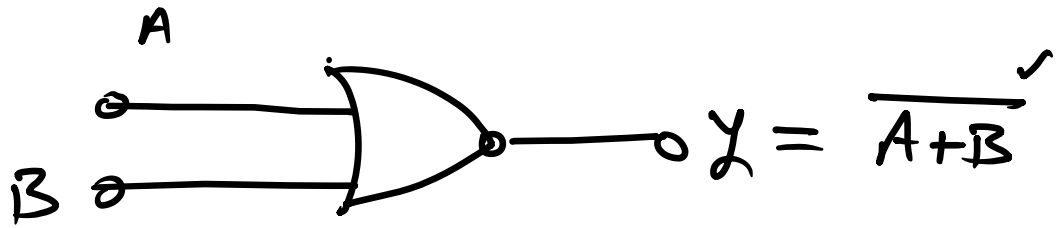


① NAND –



A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

② NOR Gate -



A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

The operation of every gate can be performed using NOR & NAND Gate, so these are called as universal Gates.