Lesson	Topic	Class no.
Computer Fundamental	**Number System**	004

LOGIC GATES

- ➢ **WHAT IS LOGIC GATE**
- ➢ **TYPE OF LOGIC GATES**
- ➢

LOGIC GATES

What is Logic Gate?

In a circuit, logic gates work based on a combination of digital signals coming from its inputs. Most logic gates have two inputs and one output, and they are based on Boolean algebra. At any given moment, every terminal is in one of the two binary conditions: true or false. False represents 0, and true represents 1

How many Logic Gates in there?

There are 7 types of Logic Gate i.e.
AND GATE, OR GATE, NOT GATE, NOR GATE, NAND GATE, XOR GATE, XNOR GATE

LOGIC GATES

What is AND Gate?

An AND gate is used to perform logical Multiplication of binary input. The Output state of the AND gate will be high(1) if both the input are high(1) ,else the output state will be low(0) if any of the input is low(0).

What is OR Gate?

OR GATE is most widely used digital logic circuit. The output state of OR gate will be high i.e.,(1) if any of the input state is high or 1, else output state will be low i.e., 0.
The Boolean Expression for the OR gate is the logical addition of inputs denoted by plus sign(+) as

What is NOT Gate?

In digital electronics, the NOT gate is one of the basic logic gate having only a single input and a single output. It is also known as inverter or inverting buffer. When the input signal is "low" the output signal is "high" and vice-versa.

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LOGIC GATES

What is NOR Gate?

The NOR gate is the type of universal logic gate. It takes two or more inputs and gives only one output. The output state of the NOR gate will be high(1) when all the inputs are low(0). NOR gate returns the complement result of the OR gate. It is basically a combination of two basic logic gates i.e., OR gate and NOT gate.

What is NAND Gate?

The NAND Gate is another type of Universal logic gate. The NAND gate or "Not AND" is the combination of two basic logic gates AND gate and the NOT gate connected in series. It takes two or more inputs and gives only one output. The output of the NAND gate will give result high(1) when either of its input is high(1) or both of its input are low(0). In simple, it performs the inverted operation of AND gate.

What is XOR Gate?

In digital electronics, there is a specially designed logic gate named, XOR gate, which is used in digital circuits to perform **modulo sum**. It is also referred to as **Exclusive OR gate or Ex-OR gate**. it is used extensively in arithmetic logic circuits., logic comparators and error detection circuits. The XOR gate can take only two inputs at a time and give an output. The output of the XOR gate is high(1) only when its two inputs are dissimilar i.e., if one of them is low(0) then other one will be high(1).
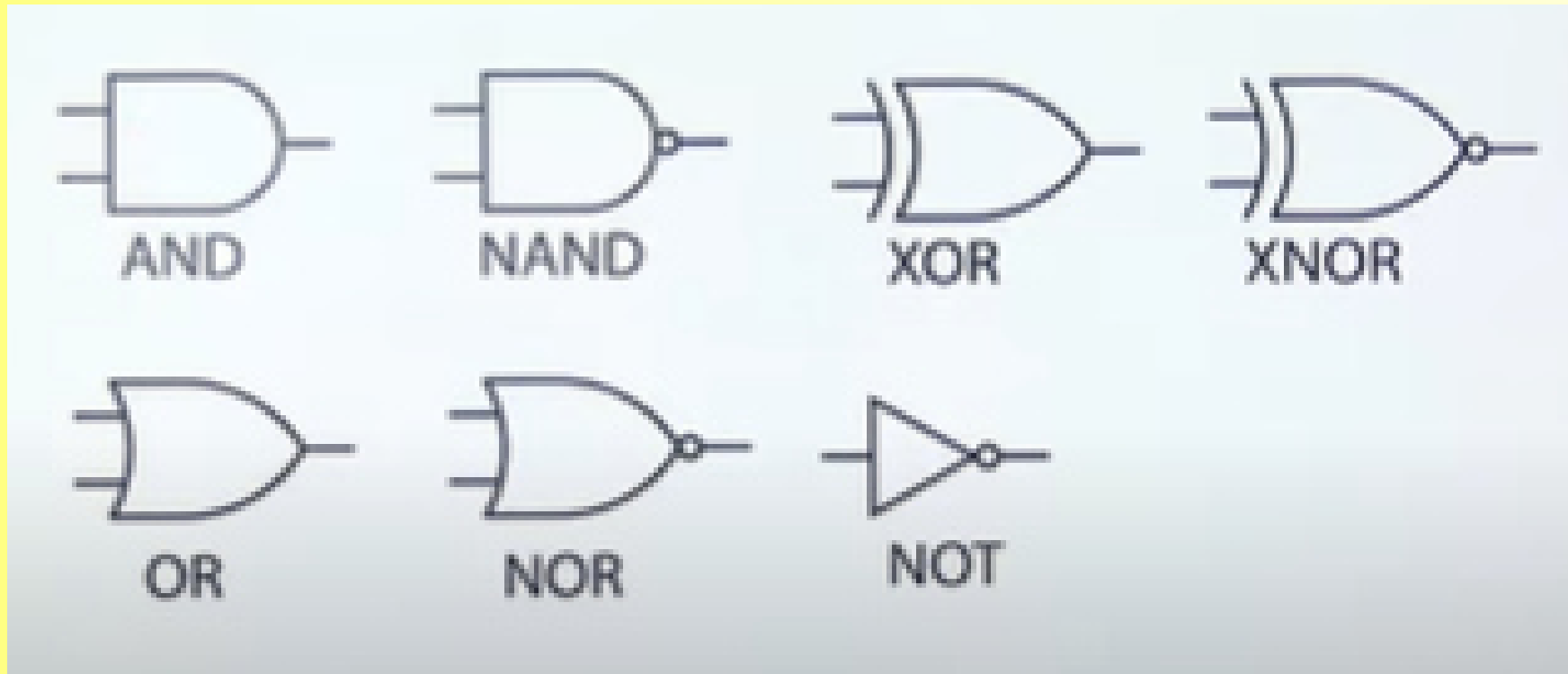
LOGIC GATES

What is XNOR Gate?

The [XNOR](#) is the combination of XOR gate and NOT gate. The output of the XNOR gate is high(1) when both the inputs are high(1) or low(0). In other words, the output of the XNOR gate is high(1) when both the inputs are the same. the XNOR gate can be sometimes be called as Equivalence gate. In simple words, The XNOR gate is the complement of the XOR gate.

LOGIC GATES

➢ WHAT IS LOGIC GATE

LOGIC GATES

➢ **Where use gate ??**

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LOGIC GATES

➤ TYPE OF LOGIC GATES
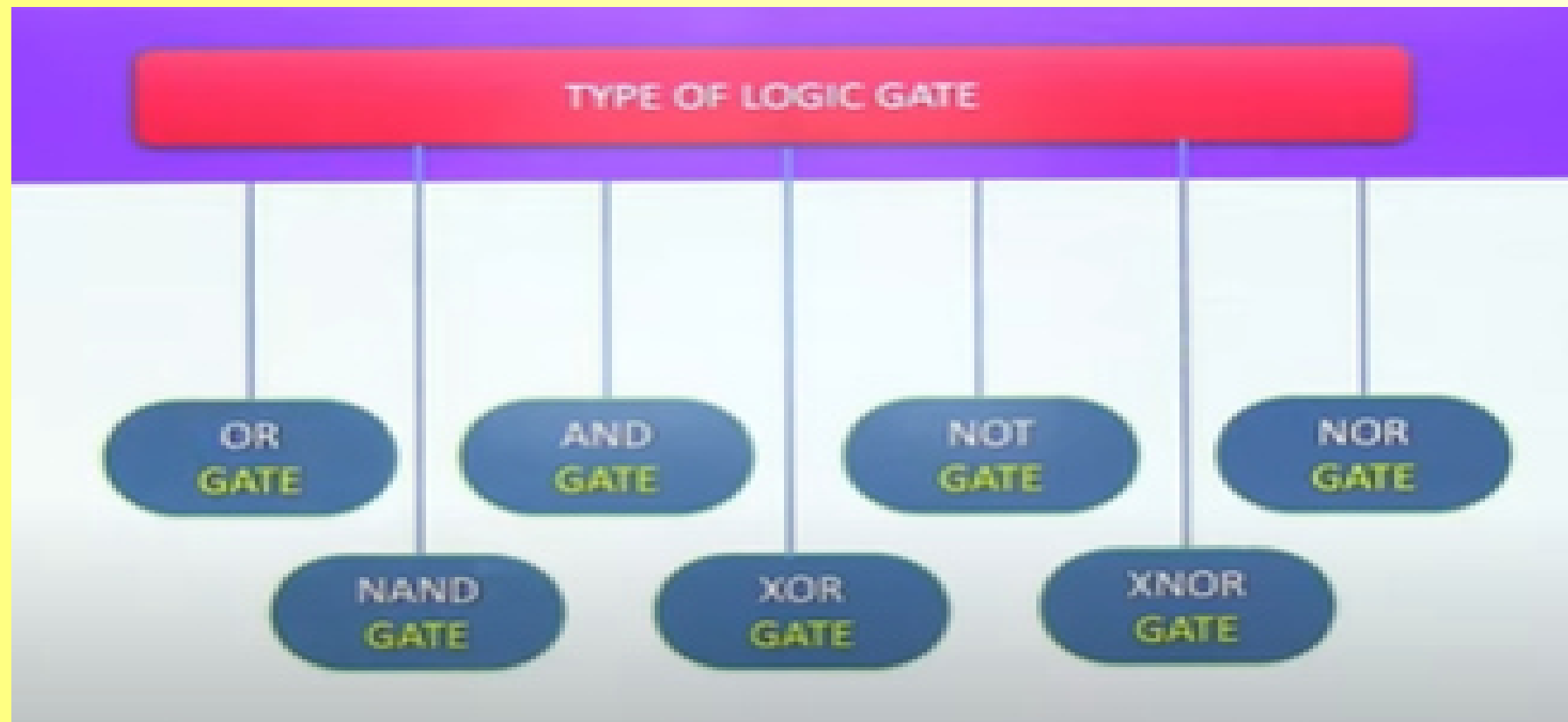
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LOGIC GATES

➢ OR GATE
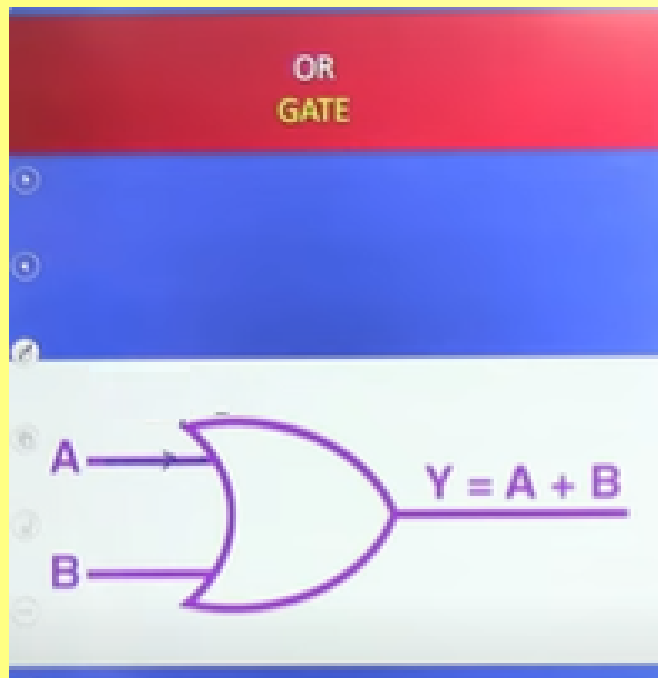
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

$Y = A + B$

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LOGIC GATES

➤ AND GATE
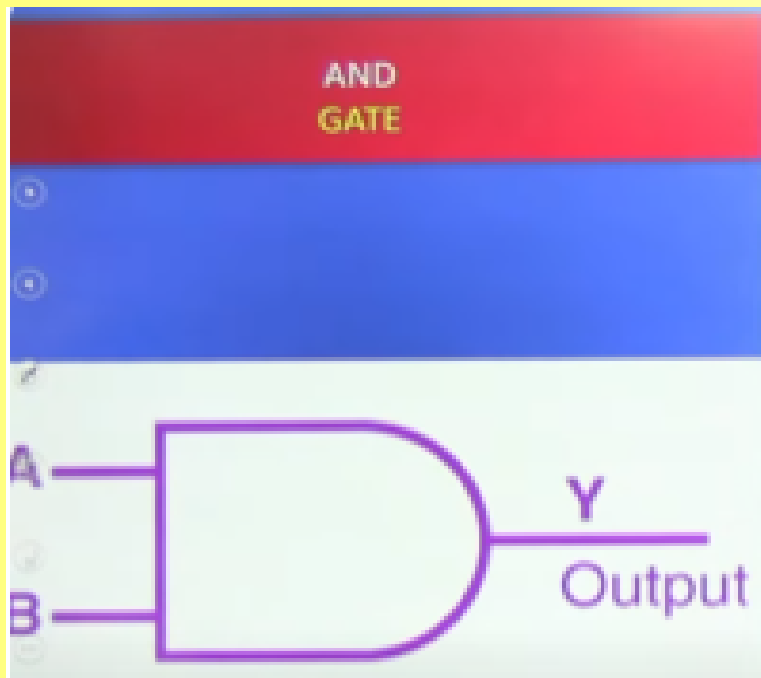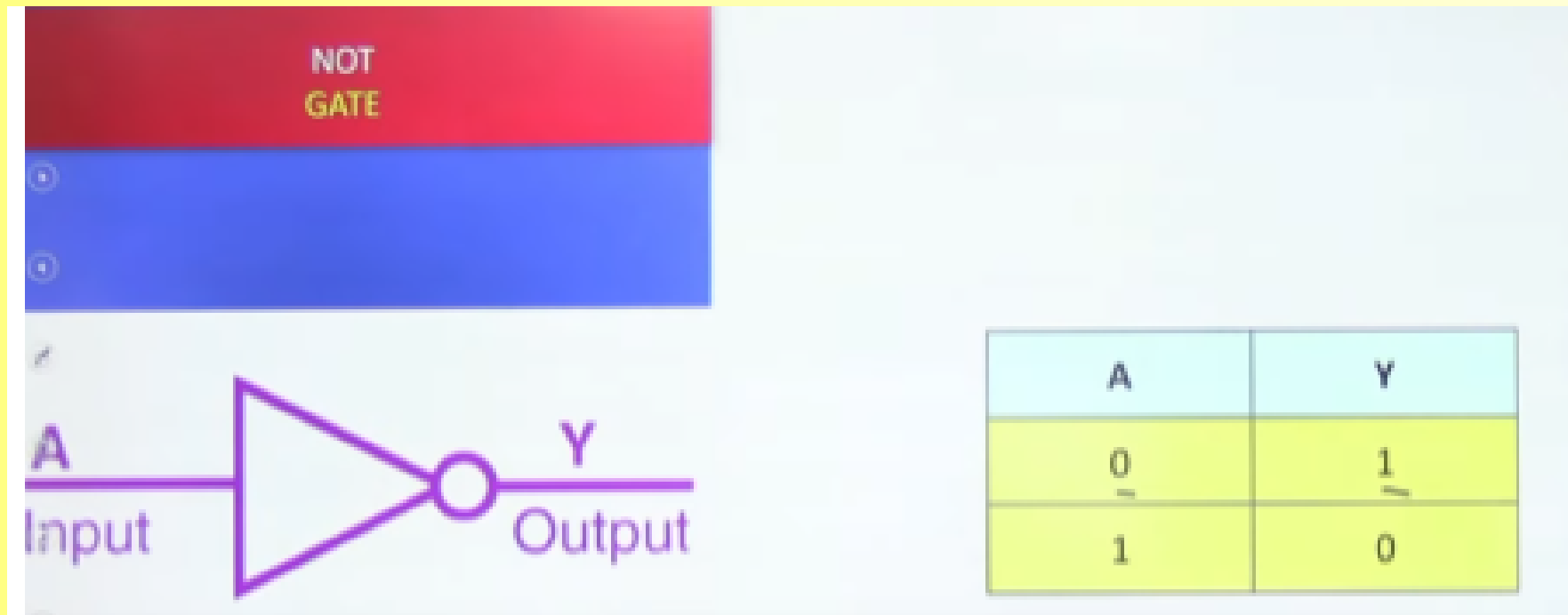
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

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LOGIC GATES

➢ NOT GATE

A	Y
0	1
1	0

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LOGIC GATES

➤ NAND GATE
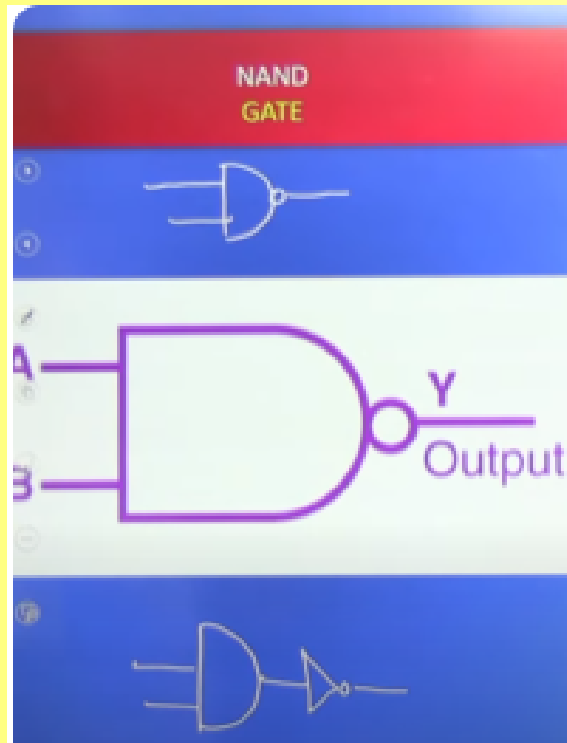
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

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LOGIC GATES

➤ NOR GATE
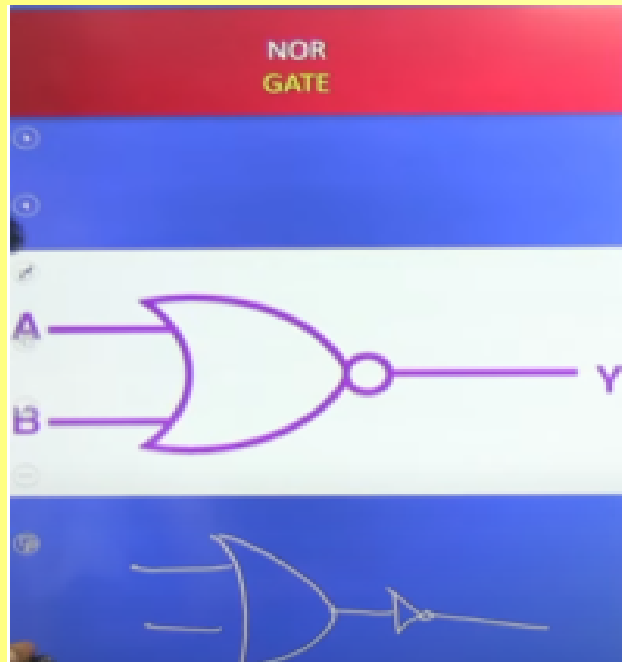
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

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LOGIC GATES

➤XOR GATE
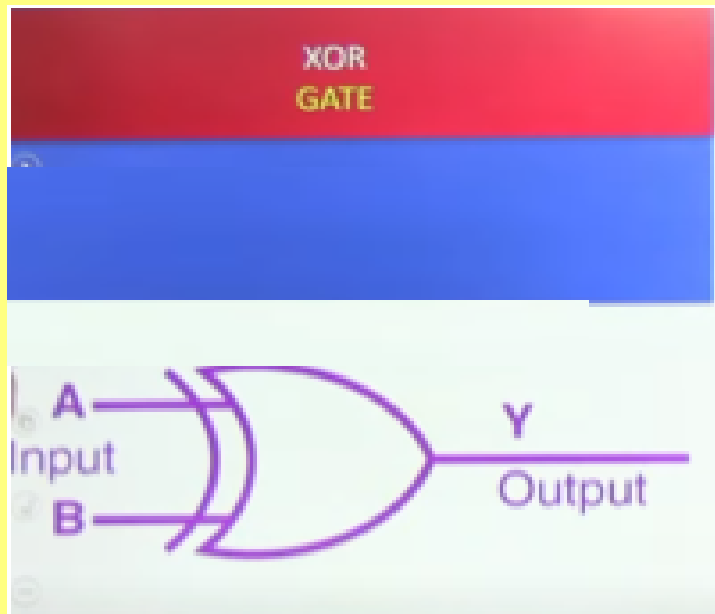
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

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LOGIC GATES

➢XNOR GATE

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