

# \* Digital Electronics and Logic Design (DELD) - Practical Number - 1.

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Class:- Second Year Engineering.

Div:- A Roll Number:-

Batch:-

Department:- Computer Department

College:- AISSMS's IOIT

Title:- Content to bridge the Gap, Logic Gates.

Aim:-

To realize Logic Gates and their working.

Objective:-

To study the types of gate present.

Theory:-

Logic Gates:-

A logic gate is an electronic (device) circuit which make logical decision based on combination of digital / electronic signals present on its input.

Types of Logic Gates:-

① NOT ② AND ③ OR ④ NAND ⑤ NOR ⑥ EX-OR ⑦ EX-NOR



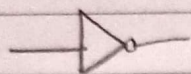
Gate Name

Gate Symbol

Truth Table

Description

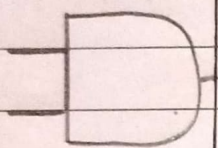
NOT



Input A	Output
0	1
1	0

Also known as Inverter Gate.

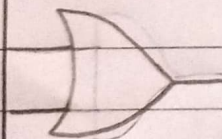
AND



Input A	Input B	Output
0	0	0
0	1	0
1	0	0
1	1	1

Output is 1 only if all inputs are 1. AND gates can have two, three, or more inputs.

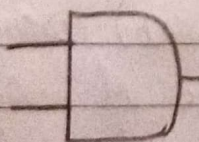
OR



Input A	Input B	Output
0	0	0
0	1	1
1	0	1
1	1	1

Output is 1 if either of the inputs are 1. Output is 0 only if ~~both~~ all inputs are 0. Can have more than 2 inputs.

NAND



Input A	Input B	Output
0	0	1
0	1	1
1	0	1
1	1	0

NAND gate also known as NOT-AND as it is opposite of AND. As its output is 1 if all inputs are not 1, can have more than one inputs.

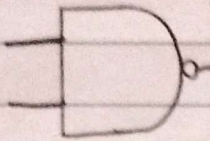


Gate Name Gate Symbol

Truth Table

Description

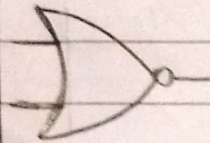
NAND



Input A	Input B	Output
0	0	1
0	1	1
1	0	1
1	1	0

NAND gate also known as NOT-AND as it is opposite of AND. As its output is 1 if all inputs are not 1. Can have multiple inputs.

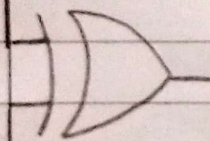
NOR



Input A	Input B	Output
0	0	1
0	1	0
1	0	0
1	1	0

NOR gate also known as NOT-OR as it is opposite of OR, its output is 1 if all inputs are 0. Can have multiple inputs.

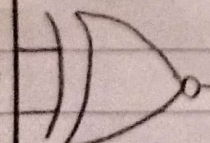
EX-OR



Input A	Input B	Output
0	0	0
0	1	1
1	0	1
1	1	0

EX-OR also known as Exclusive OR gate, its output is only 1 if either of inputs are 1, but 0 when both are same or all inputs are same.

EX-NOR



Input A	Input B	Output
0	0	1
0	1	0
1	0	0
1	1	1

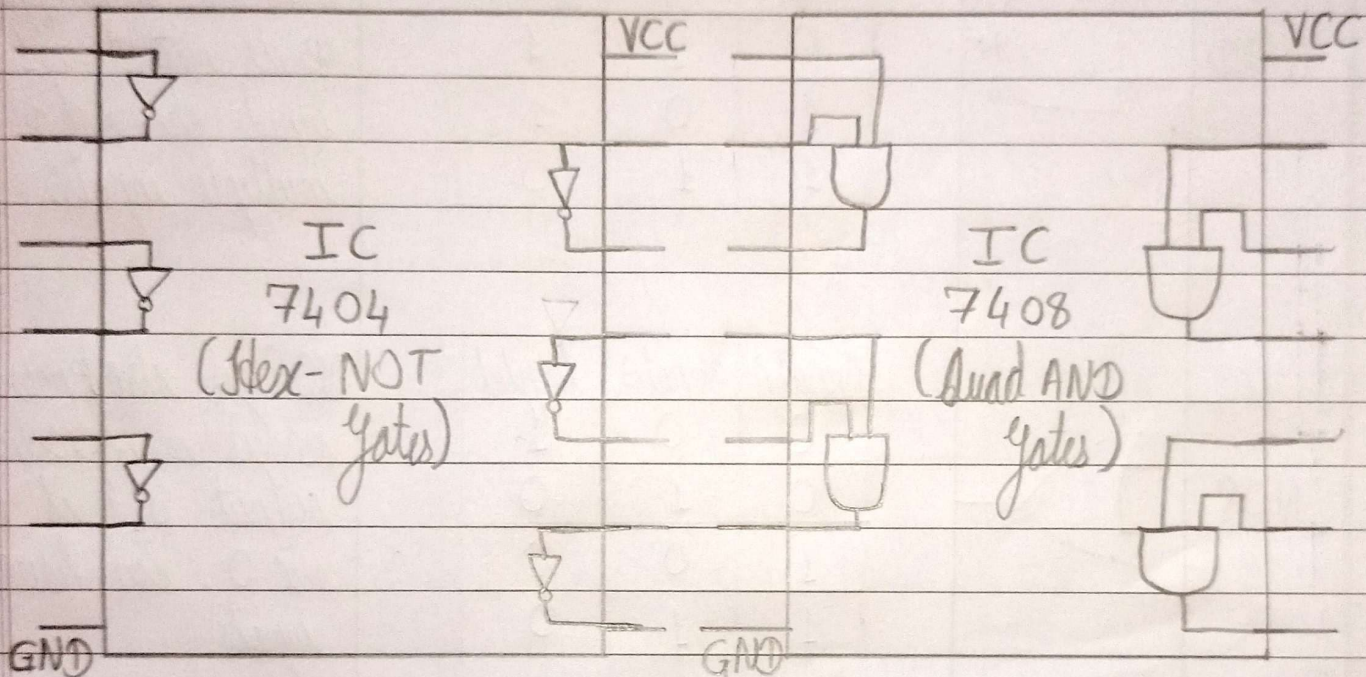
EX-NOR also known as Exclusive NOR gate, its output is 1 only if all inputs are same. Can have multiple inputs.



# ICs of Logic Gates:-

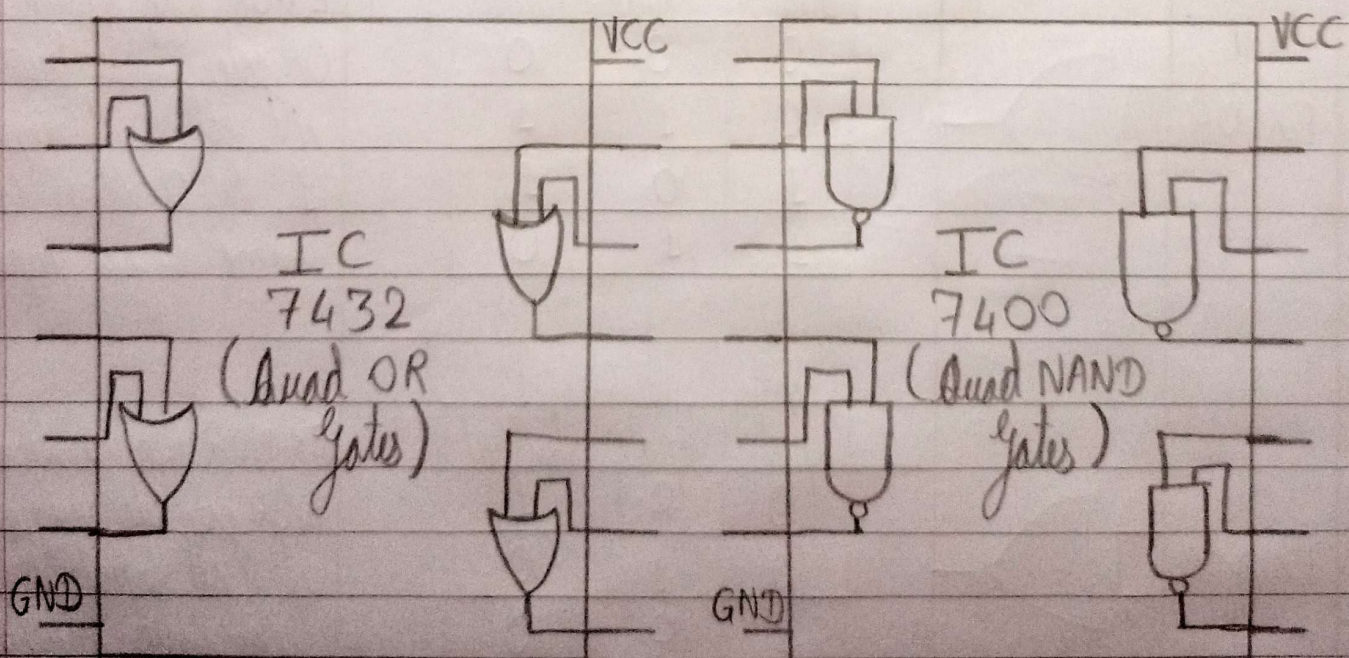
1) NOT (IC-7404)

2) AND (IC 7408)



3) OR (IC-7432)

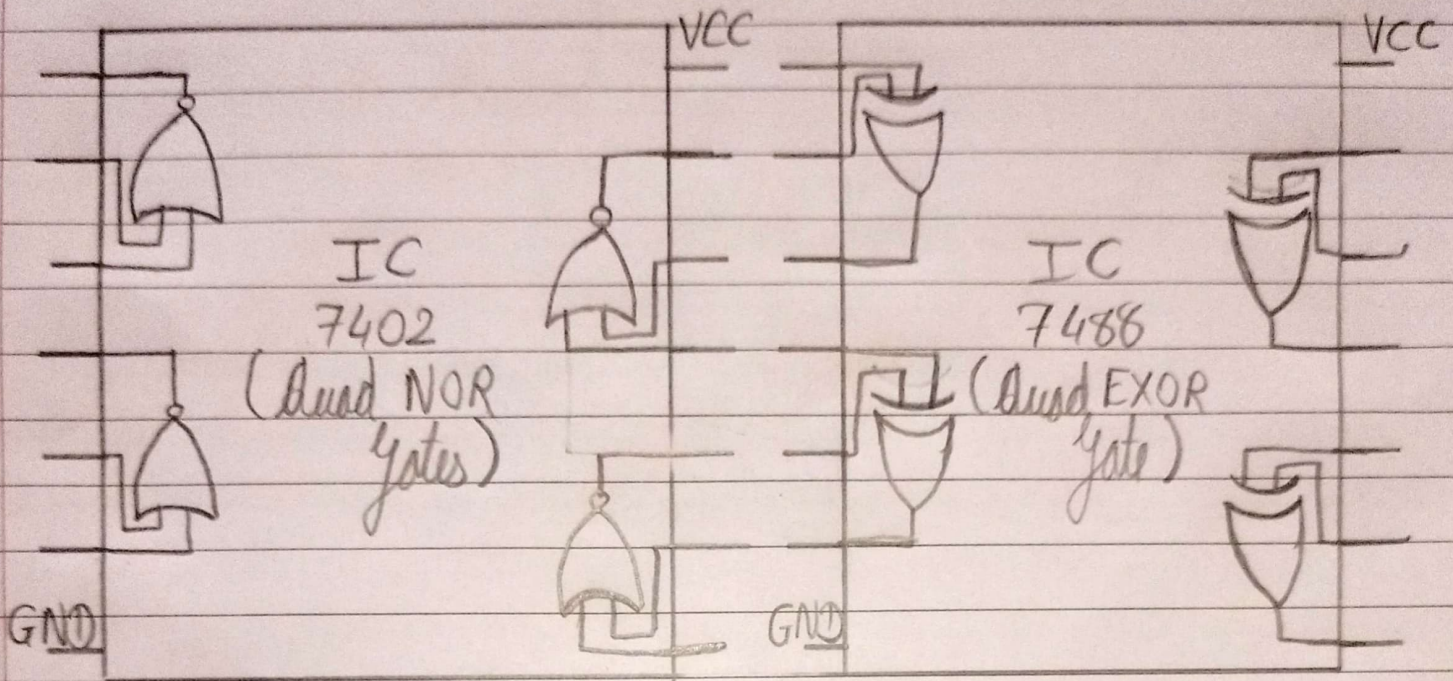
4) NAND (IC-7400)



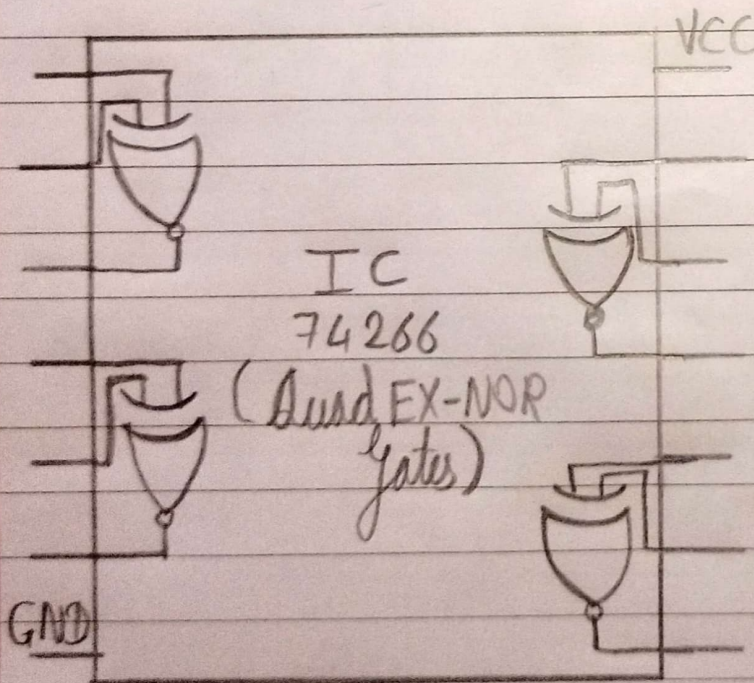


5) NOR (IC-7402)

6) EX-OR (IC-7486)



7) EX-NOR (IC-74266)



Conclusion:-

Hence we have studied the Basic Logic Gate.