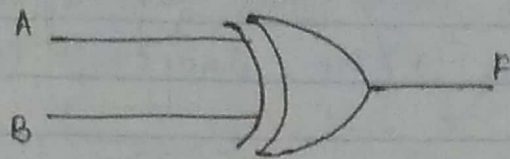


## Tutorials ②

① Imagine you have two inputs A and B, and you want to design a logic circuit that outputs a 1 if and only if;

- A is a 0 and B is a 1 or
- A is a 1, and B is a 0

which logic gates would you use to create this circuit

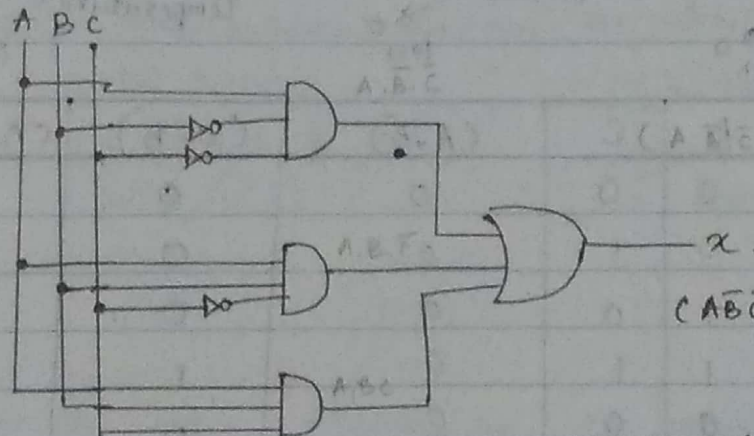


XOR

A	B	F
0	1	1
1	0	1
0	0	0
1	1	0

XOR Gate.

② Consider the logic circuit shown in the figure, in which A, B and C are the inputs and x is the output.



$$(A\bar{B}\bar{C}) + (A\bar{B}C) + (A\bar{B}C)$$

A	B	C	$\bar{B}$	$\bar{C}$	$A\bar{B}\bar{C}$	$A\bar{B}C$	$A\bar{B}C$	x
0	0	0	1	1	0	0	0	0
0	0	1	1	0	0	0	0	0
0	1	0	0	1	0	0	0	0
0	1	1	0	0	0	0	0	0
1	0	0	1	1	1	0	0	1
1	0	1	1	0	0	0	0	0
1	1	0	0	1	0	1	0	1
1	1	1	0	0	0	0	1	1

9) Draw the truth table and logic circuit.

### Description

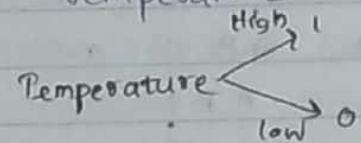
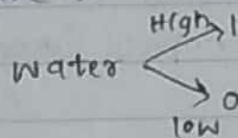
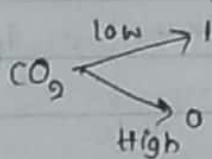
An alert will be displayed when certain conditions occur in a nuclear reactor.

### Conditions

The output of a logic circuit that drives the display of the alert must have a value of 1 when either one of the conditions is met.

- Carbon dioxide pressure too low and temperature  $> 300^{\circ}\text{C}$ .

- Water pressure  $> 10$  bar and temperature  $> 300^{\circ}\text{C}$ .



A	B	C	(A.B)	(C.B)	(A.B) + (C.B)
0	0	0	0	0	0
0	0	1	0	0	0
0	1	0	0	0	0
0	1	1	0	1	1
1	0	0	0	0	0
1	0	1	0	0	0
1	1	0	1	0	1
1	1	1	1	1	1