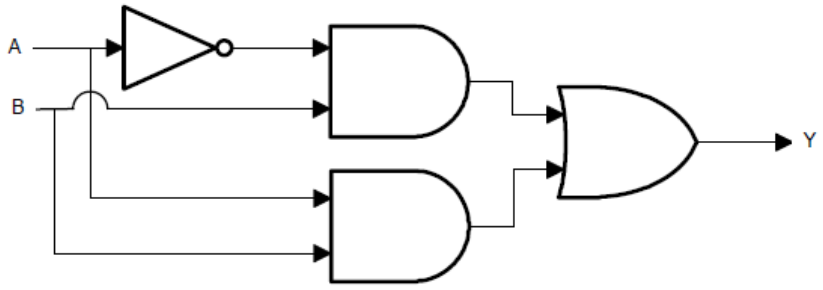
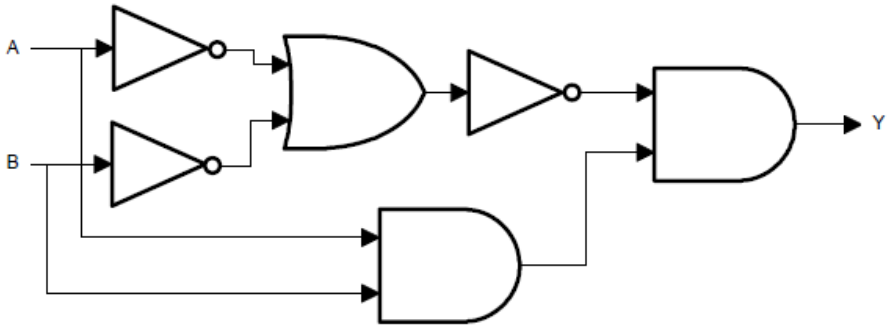
Sri Lanka Institute of Information Technology
B. Sc Degree in IT/IS/CSN, Diploma in Information Technology
Year 01 – Semester I – 2017
Mathematics for Computing (IT1030)
Tutorial 01

1. Draw a truth table for a three input AND gate and a FOUR input OR gate.

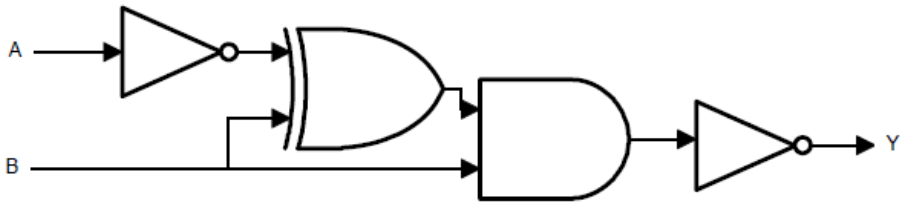
2. Find the outputs of the following circuits.
   a.



   b.



   c.



3. What type of logic gate's behavior does this truth table represent?

?			
A	B	C	?
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

I. 2 input OR
II. 3 input OR
III. 3 input EXOR
IV. 4 input EXOR

4. A nuclear power station has a safety system based on three inputs to a logic circuit (network). A warning signal (S = 1) is produced when certain conditions in the nuclear power station occur based on these three inputs.

Inputs	Binary values	Description of plant status
T	1	Temperature > 115°C
	0	Temperature <= 115°C
P	1	Reactor pressure > 15 bar
	0	Reactor pressure <= 15 bar
W	1	Cooling water > 120 litres/hour
	0	Cooling water <= 120 litres/ hour

A warning signal (S = 1) will be produced when any of the following occurs:

(a) Temperature > 115°C and Cooling water <= 120 litres/ hour
or
(b) Temperature <= 115°C and Reactor pressure > 15 bar
or
(c) Cooling water <= 120 litres/hour

Draw a logic circuit (network) and truth table to show all the possible situations when the warning signal (S) could be received.