SL-
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IUB	Independent University, Bangladesh (IUB) School of Engineering, Technologies and Science (SETS) **Department of Computer Science & Engineering (CSE)**		
Marks		Lab Report No	04
Allocated	Obtained	Course Code	CSC204L/CCR204L
		Course Title	Digital Circuit Lab Report
		Course Instructor	
		Section	02
		Student Name	
		Student ID	
Due Date		Submission Date	

Experiment 4:

Designing of a Full adder circuit using integrated circuit logic gates and verifying the truth table.

OBJECTIVE:

- To implement a full adder circuit using Ex-OR gates, AND gates and OR Gate.

APPARATUS:

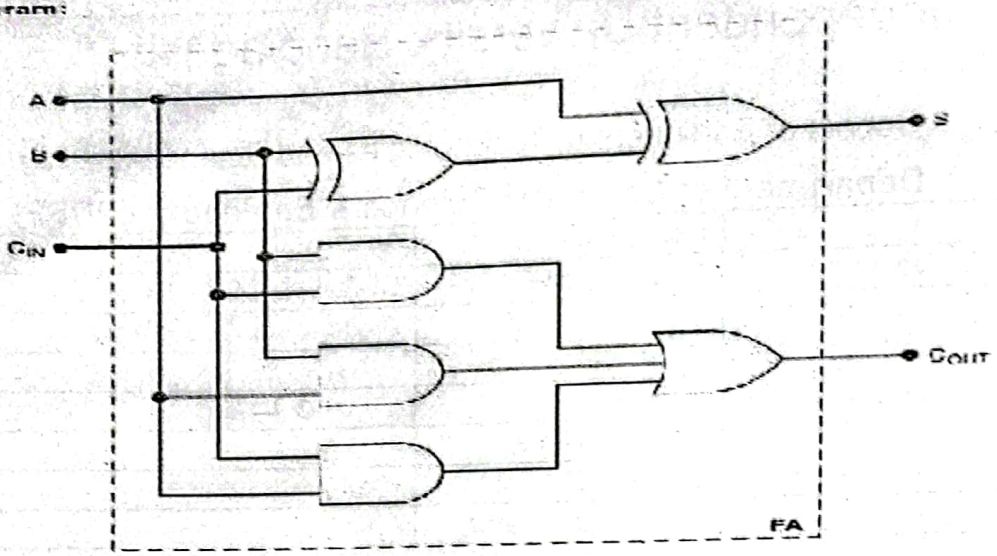
- IC Type 7486 Quadruple 2-input XOR gates
- IC Type 7408 Quadruple 2-input AND gate
- IC Type 7432 Quadruple 2-input OR gate
- Digital Electronic Trainer Kit
- Power Supply Unit

THEORY:

Full Adder- Logic circuit with three inputs and two outputs. The inputs are a carry bit (C_{IN}) from a previous stage, a bit from the augend, and a bit from the addend, respectively. The outputs are the sum bit and the carry-out bit (C_{OUT}) produced by the addition of the bit
from the addend with the bit from the augend and C_{IN}.

Augend bit input A	Addend bit input B	Carry bit input C_{IN}	Sum bit output S	Carry bit output C_{OUT}
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

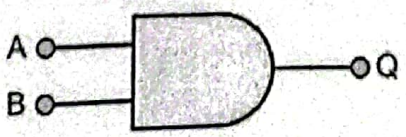
Circuit Diagram:



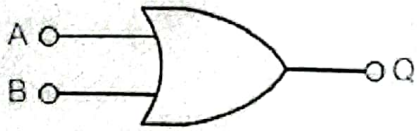
Truth Table for Full-adder:

Input			Output	
X	Y	Cin	S	C_o
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

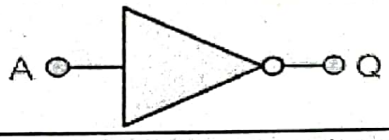
AND Operation:

Symbol	Truth table		
	A	B	Q=A.B
	0	0	0
	0	1	0
	1	0	0
	1	1	1

OR Operation:

Symbol	Truth table		
	A	B	Q=A+B
	0	0	0
	0	1	1
	1	0	1
	1	1	1

NOT Operation:

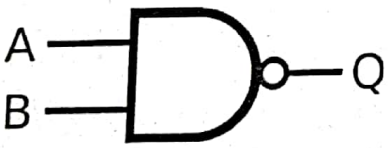
Symbol	Truth table	
	A	Q=$\bar{A}$
	0	1
	1	0

** Presence of a small circle at the output side of any gate always denotes inversion

NOR Operation:

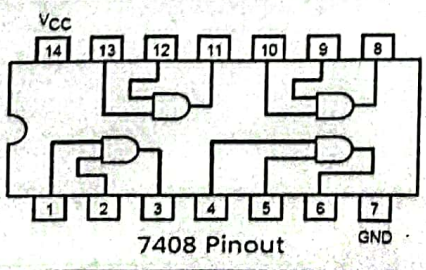
Symbol	Truth table		
	A	B	Q=$\bar{\bar{A}}+\bar{\bar{B}}$
	0	0	1
	0	1	0
	1	0	0
	1	1	0

NAND Operation:

Symbol	Truth table		
	A	B	Q=$\bar{A}\bar{B}$
	0	0	1
	0	1	1
	1	0	1
	1	1	0

Pin diagram:

1. **IC 7408 AND gate**

PIN diagram	PIN description			
 7408 Pinout	PIN no.	Function	PIN no.	Function
	7	**Ground**	**14**	**+Vcc**
	1,2	Input	3	Output
	4,5	Input	6	Output
	9,10	Input	8	Output
	12,13	Input	11	Output