* Digital Electronics and Logic Design (DELD) - Practical Number - 4

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Batch:-
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Title:-
4-bit Binary Adder (IC-7483).

Aim:-
Design and Realization of BCD Adder using 4-bit binary Adder (IC-7483).

Objective:-
Student will be able to realize the BCD adder using binary adder and logic gates.

Theory:-

Adder:-
An adder is digital circuit that perform addition of number. In many computer and other kind of processor adder are used in arithmetic logic Unit (ALU).

Binary Adder:-
Binary Adder are arithmetic circuits in the form of half-adder and full adder used to add together two binary digits.
It is very common combinational logic circuit which can be constructed

using logic circuit just a few basic logic gates allowing it to add together two or more binary number is the Binary Adder.

BCD Adder:-

A BCD Adder is a circuit that add two BCD digits and produce a sum digit also in BCD.

To implement BCD Adder we require:- ① 4-bit binary adder, 2 if sum greater than 9.
② Logic circuit to detect sum greater than 9.

Truth Table:-

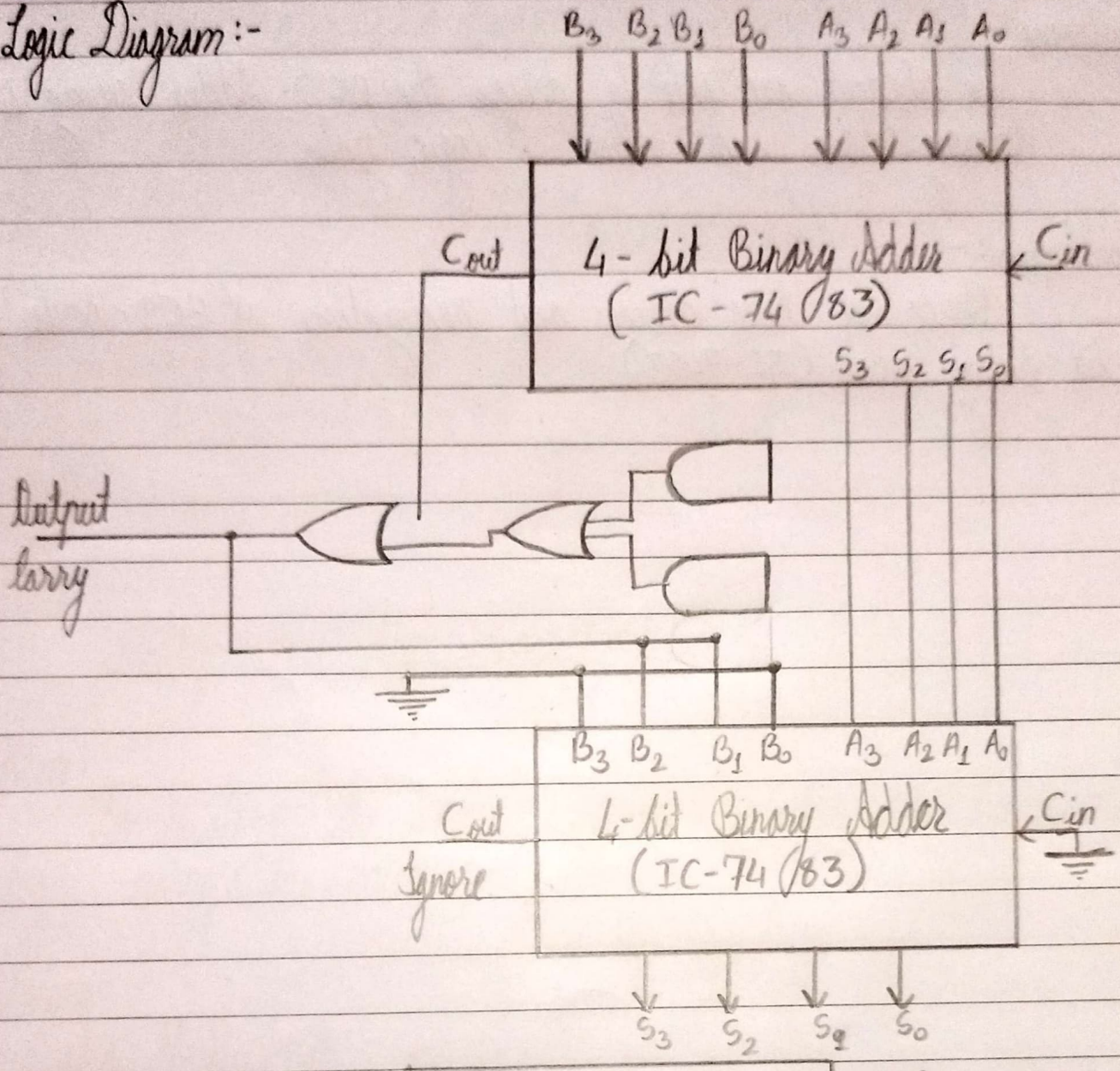
Input				Output
A (S_3)	B (S_2)	C (S_1)	D (S_0)	Y
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Simplification of the truth table using K-map.

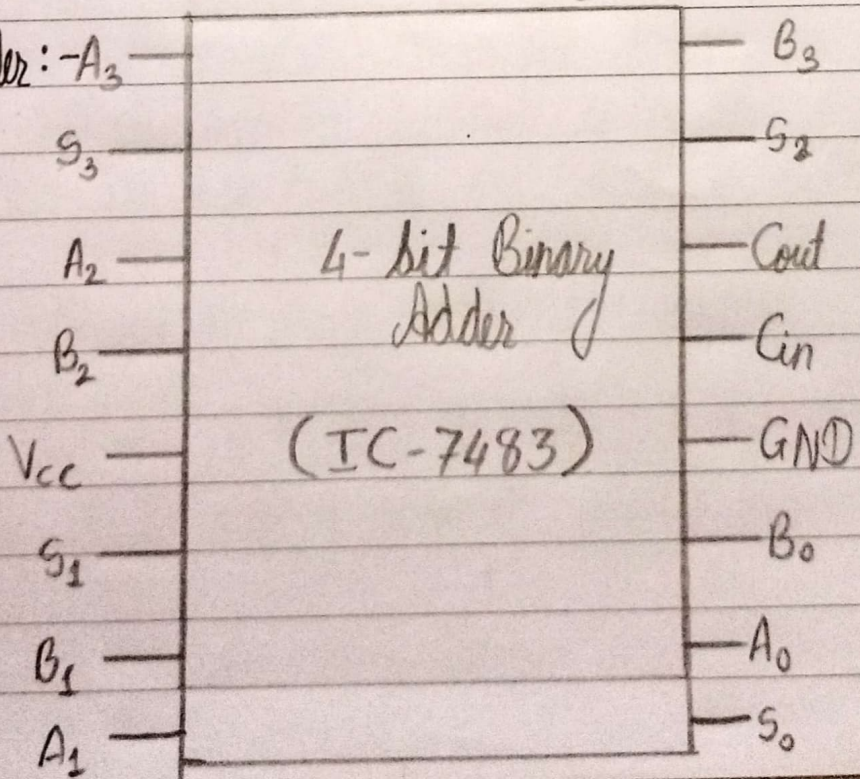
S_3S_2 \ S_1S_0	00	01	11	10
00	0	0	0	0
01	0	0	0	0
11	1	1	1	1
10	0	0	1	1

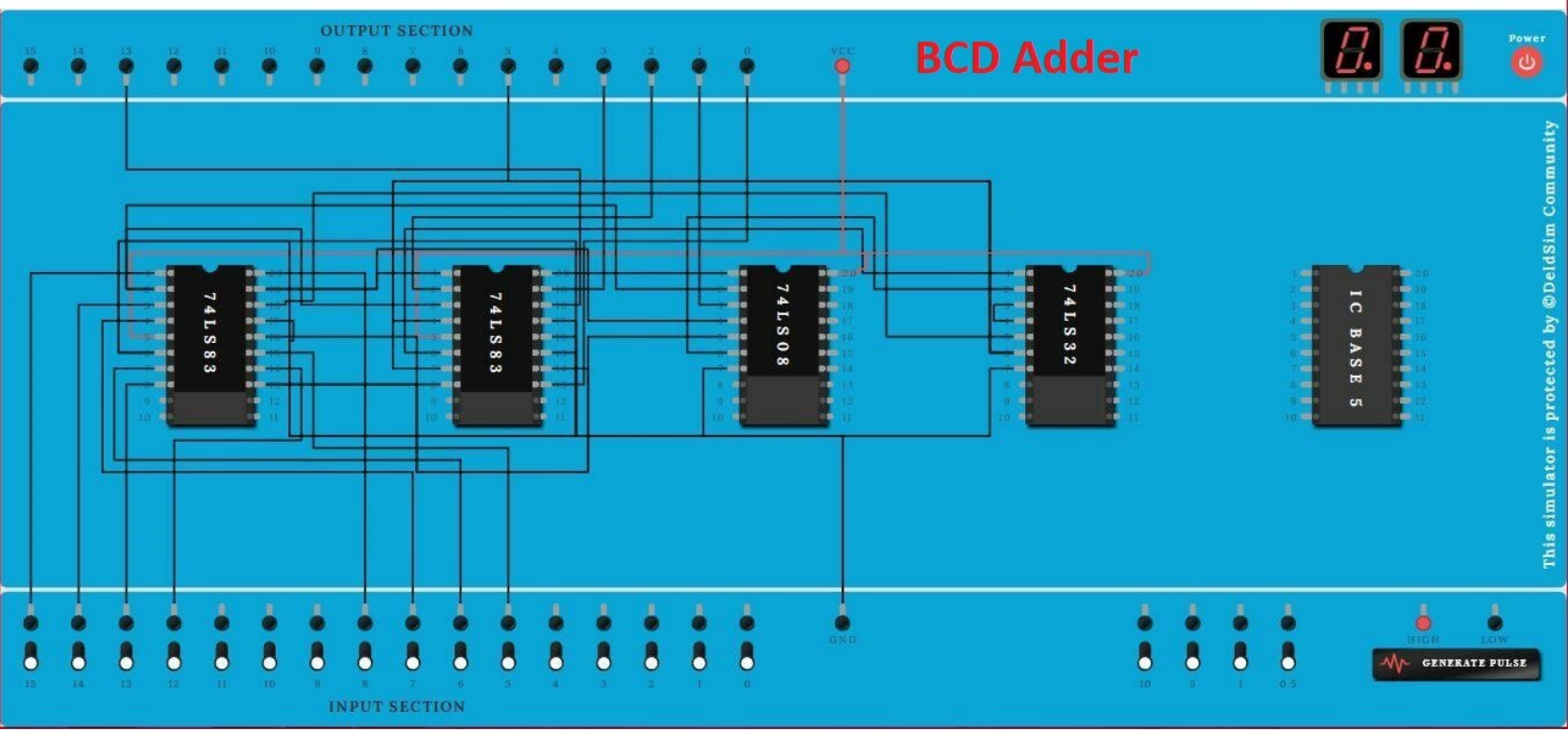
$$Y = S_3S_2 + S_2S_1$$

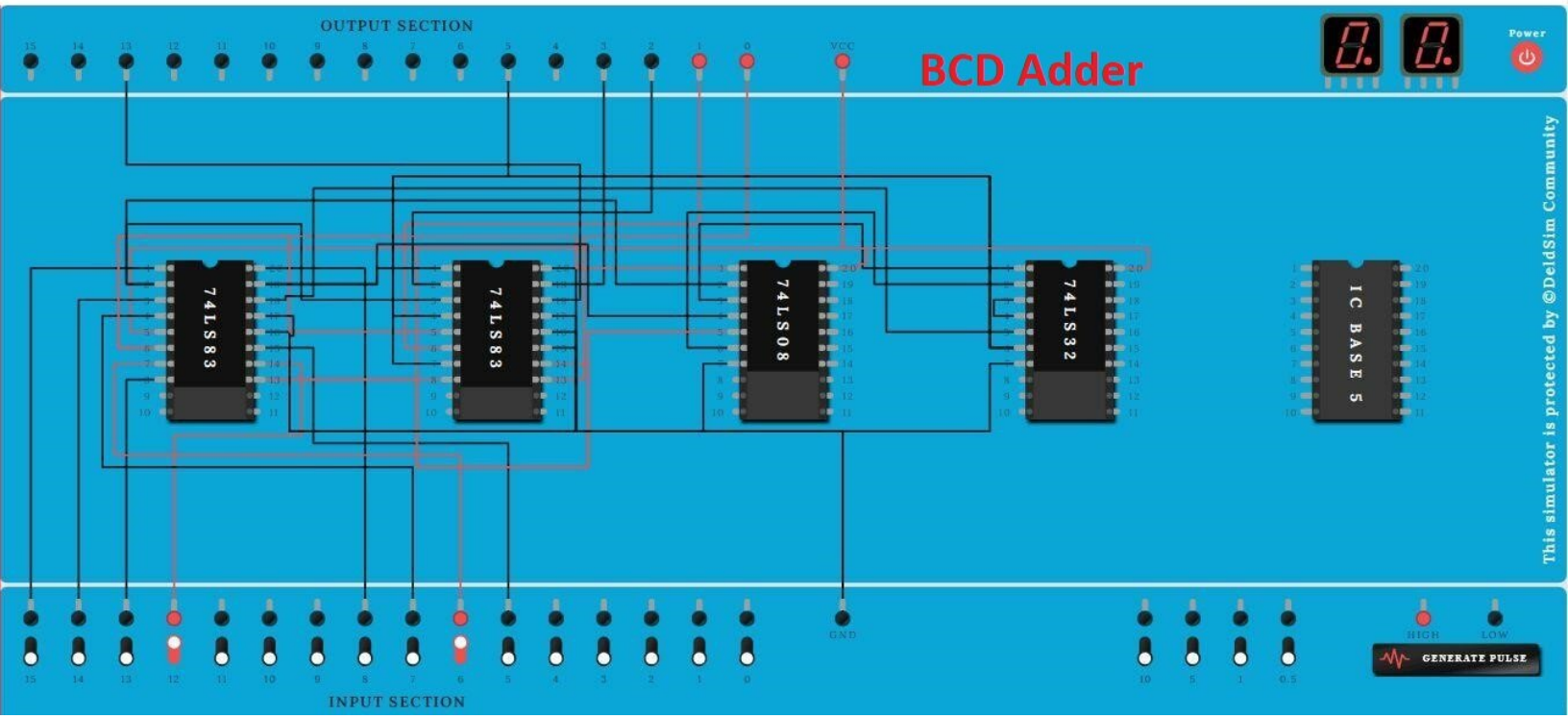
Logic Diagram :-



4-bit Binary Adder :-




OUTPUT SECTION
BCD Adder
Power
VCC
74LS83
74LS83
74LS08
74LS32
IC BASE 5
This simulator is protected by ©DeldSim Community
GND
HIGH
LOW
GENERATE PULSE
INPUT SECTION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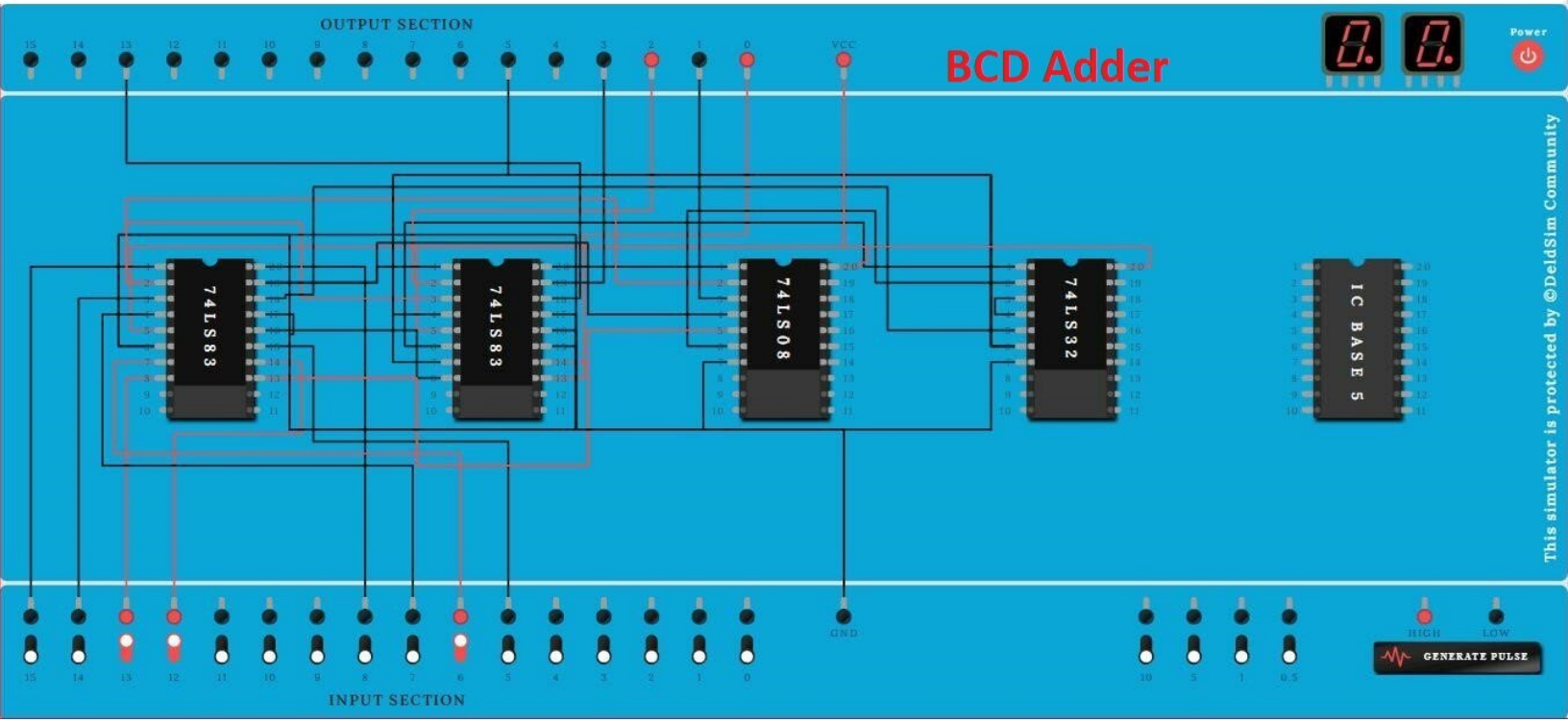
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HIGH
LOW
GENERATE PULSE
INPUT SECTION

Outcome :-

The student are able to design the BCD-Adder using 4-bit Binary Adder and other logic gates.

Conclusion :-

Hence we have design and realization of BCD-Adder using 4-bit binary adder (IC-7483).