ASSIGNMENT NO. 2

Assignment 2 : Design and Implement Half substractor and Full substractor a] Using Basic gates b] Using Universal

Objective:
a] To understand concept of Half ~~add~~ substractor and Full substractor.

Hardware requirement:-
IC7486, IC7432, IC7408, IC7400, General purpose board, DC power supply, etc.

Outcomes:-
To design combinational circuit using K-map and Boolean algebra.

Theory:
The simples binary substractor is called half substractor. It has two inputs & two outputs. One output is Difference & the others is borrowed. They are represented by 'D' & 'B' When two inputs borrow have to be substracted the number of three input and input combinations increases to eight, for this full substractor is used

Procedure :-
i] Verify the gates.
ii] Make connections as per circuit digram
iii] Switch on V_{cc} and apply various combination of input according to the truth table.

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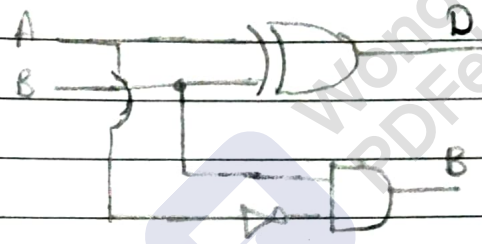
Half substracter :-

Input		Output	
A	B	Difference	Borrow
0	0	0	0
0	1	1	1
1	0	1	0
1	1	0	0

Circuit Diagram :-

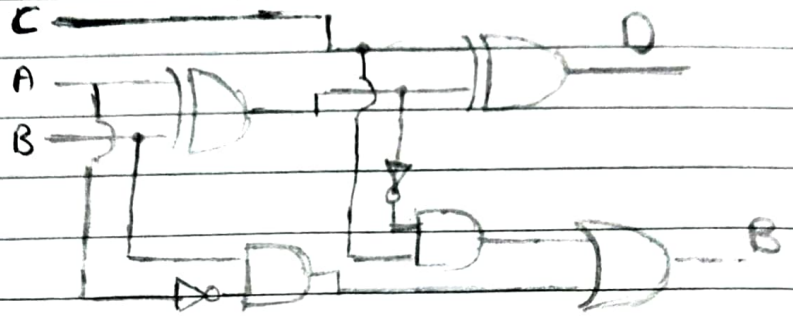


Truth Table :-

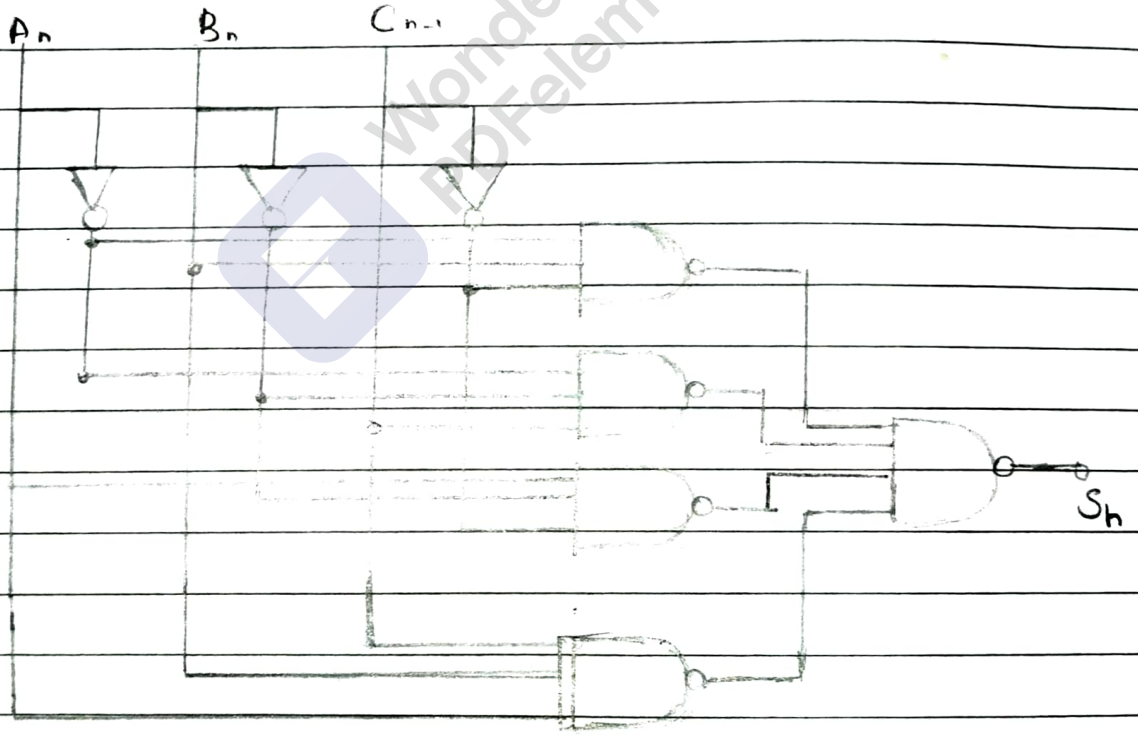
Input			Output	
A	B	Bin	D	Bout
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1

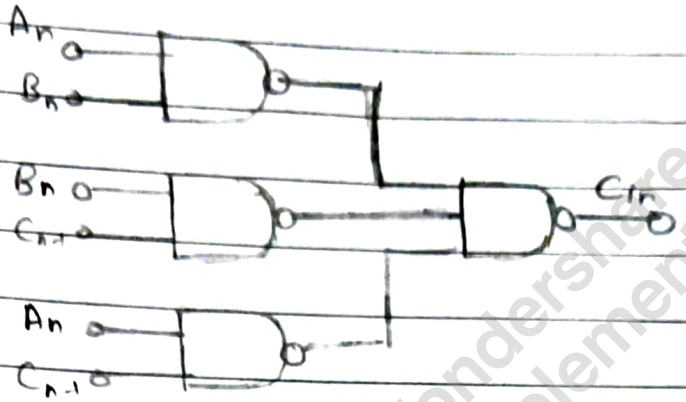
Circuit Diagram :-

Using Basic Gates :-



Using NAND gates :-





Conclusion :-

Thus realization of Half ~~adder~~ subtractor, Full ~~adder~~ subtractor using basic gates & universal gates is done.