COA UPE

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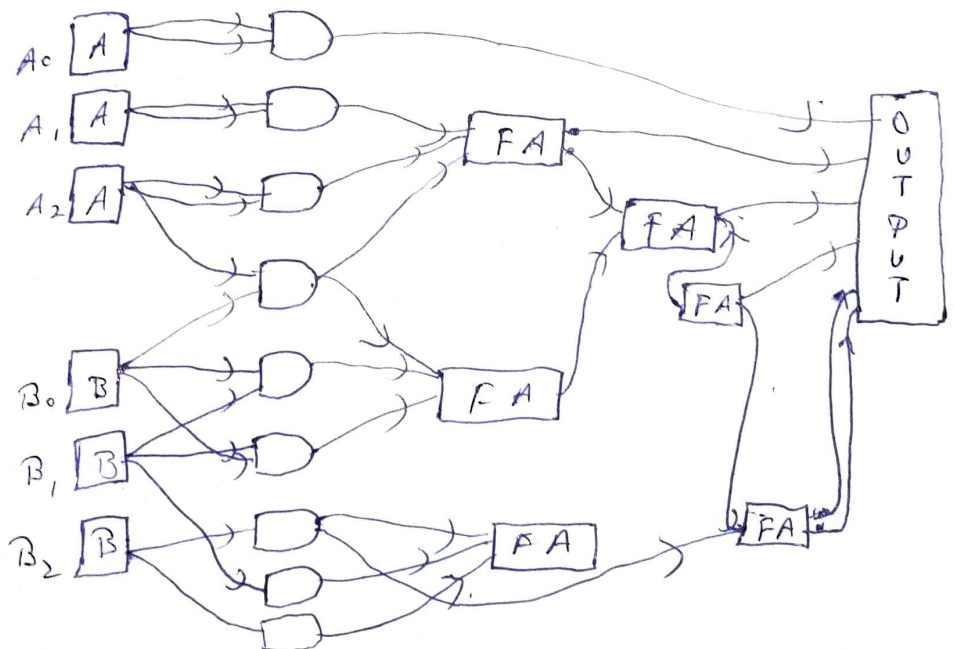Alloted question No. (26)

Q1.) Implement Carry Save Multiplier for 3 bit input.

AIM: To design and implement a Carry save multiplier for 3 bit input.

SOFTWARE: Logic gate simulator

Circuit diagram: -

Procedure

→ open logic gate simulator

→ create a full adder circuit first

→ Then create an IC using the full adder circuit

→ Now open a new file in logic gate sim

→ Take 6 userinputs and place as given in circuit diagram.

→ And using AND gates of total 9 and give connection.

→ Now export IC of full adder and place it in circuit connection. A total of 6 full adder IC must be used

→ Now for output select numeric output and given 6 pin connection.

→ Give proper connection.

TRUTH TABLE :- (Keeping $A_0 = 1$, $A_1 = 1$)

A_0	A_1	A_2	B_0	B_1	B_2	Output
1	0	0	1	0	0	1
1	0	0	0	1	0	2
1	0	0	0	0	1	4
1	0	0	1	1	0	3
1	0	0	0	1	1	6
1	0	0	1	0	1	5
1	0	0	1	1	1	7
0	1	0	1	0	0	2
0	1	0	0	1	0	4
0	1	0	0	0	1	8
0	1	0	1	1	0	6
0	1	0	0	1	0	C
0	1	0	1	0	1	A
0	1	0	1	1	1	F

Q2.) Subtraction of 2 numbers in 8086

Algorithm :-

```
        data segment
        A db    OFh
        B db    0Ch
        data ends

        Code segment
        assume   CS: code , ds: data
        Start :
        mov ax, data
        mov ds, ax
        mov al, A
        mov bl, B
        sub al, Bl
        Mov cx, ax
        Code ends
        end start
```

Algorithm:

1) Load data to register AL (1st No)

2) Load data of to register BL (2nd No)

3) Subtract these two numbers
   (contents of register AL and register BL)

4) Apply DAS instruction (decimal adjust)

5) Store result (content of AL)

6) Set register AL to 00

7) Add contents of register AL
   to itself with carry (borrow)

8) Store the result (content of register AL)

9) Stop