Experiment – 7

Aim of the experiment–

To study the operation of a 4-bit parallel adder cum subtractor circuit.

Apparatus required –

a) 4-bit binary full adder subtractor trainer kit.

b) connecting wires.

Theory –

Binary addition – The binary number system uses only two digits 0 & 1 due to which their addition is simple. In binary addition there are 4 basic operations.

0+0 = 0 1+0 = 1

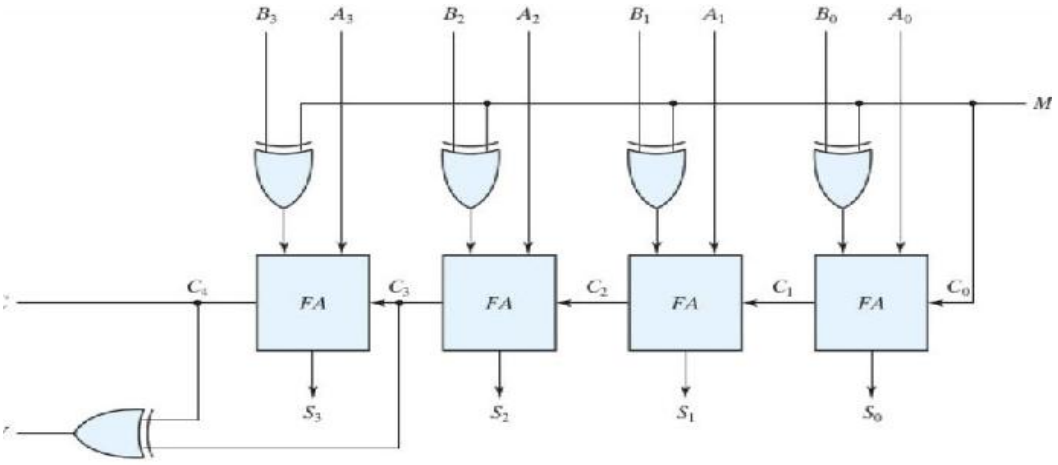
0+1 = 1 1+1 = 1

Binary subtraction - In binary subtraction also there are 4 basic operations.

0-0 = 0 1-0 = 1

0-1 = 1 1-1 = 0

Parallel adder– Parallel adder is nothing but a cascade of several full adders. The number of full adders used will depend on the no. of bits in the binary digits required to be added.



(4 bit binary parallel adder subtractor circuit with ripple carry)

Example –

let A = 00001101 B =00000011

Addition –

A + B

B in 2's compliment 00000011

So, the result from the circuit is,

(00001101) + (00000011) = 000010000
circuit shows 10000

Substraction –

A – B

-B in 2's compliment is 11111100 + 1
= 11111101

Ans is

(00001101) + (11111101) = 111110010……. circuit shows 10010

Conclusion -