

Experiment no: 9

Name: Binary parallel adder, subtractor.

Aims: Implement a circuit using a 4-bit binary adder (IC 7483) in a quarter Adder-subtractor.

Components: Bread board / kit, IC 7483

Theory:

Parallel adder: IC type 7483 is a 4-bit binary parallel adder. The 2 4-bit input binary numbers are A_1 through A_4 and B_1 through B_4 . The 4-bit sum is obtained from S_1 through S_4 . C_0 is the input carry and C_4 is the output carry.

Adder subtractor: Two binary numbers can be subtracted by taking the 2's complement of the subtrahend and adding it to the minuend. The 2's complement can be obtained by taking the 1's complement and adding 1 to perform $A-B$, we complement the four bits of B , add them to the 4-bit of A and add 1 through the input carry.

Procedure:

1. Connections are made as per the circuit diagrams
2. Switch on the power supply
3. Apply different combinations of inputs and observe the output compare the outputs with the truth table

Result

Different logic circuits are constructed and their truth tables are verified

K-map for 2

A	BC	00	01	11	10
0			1		1
1	1	1			

$$X = A'B'C + A'BC + AB'C + ABC$$

Now solving we get

$$Z = A \oplus B \oplus C$$



