Experiment No: 6

Name: Half adder & full adder

Aims: Design, Construct, and test a half adder and full adder.

Objectives: TO study the design, construction and the working of adders using discrete gates.

components :- Bread board / kit. 7486, 7408, 7400, 7432.

theory:-

Half adder: circuit needs two binary inputs and two binary outputs. The input variables designated the augend and addend bits the output variables produce the sum and carry. We assign symbols C (for carry) to the output, X and Y to be two input and S (for sum) and the truth table for the half adder is listed in table:

Full adder: A full adder is a combinational circuit that forms the arithmetic sum of three bits. It consists of three inputs and 2 outputs two of the input variables, denoted by x and y represent the two significant bits to be added, the third input, z represents the carry from the previous lower significant position

Procedure

1. Connections are made as per the circuit diagram.
2. Switch on the Power supply
3. Apply different combinations of input and observe the outputs, compare the output with the truth tables.

Result

Different logical circuit are constructed and their tables are verified.

Circuit and truth table

half adder

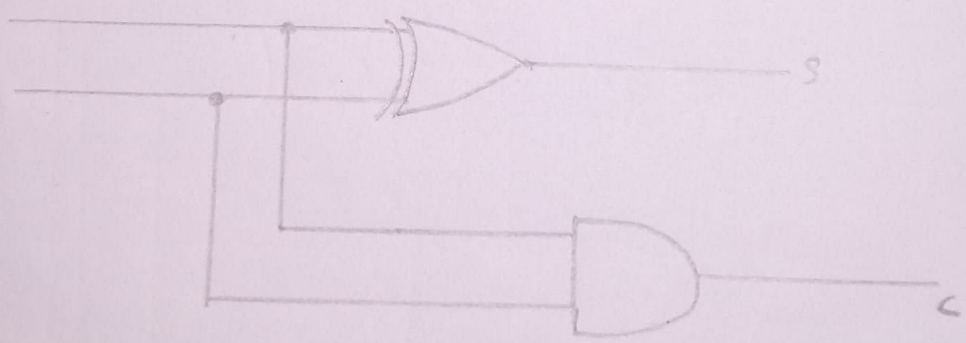
truth table

x	y	c	s
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

$S = x'y + xy'$

$C = xy$

Circuit diagram



Full addar

truth table

x	y	z	c	s
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

Circuit diagram