FULL ADDER

OBJECTIVE:

- To observe the working of full adder

THEORY:

Full adder: A full adder is a logical circuit that performs an addition operation on three binary digits. The full adder produces a 'sum' and 'carry' value, which are both binary digits. It can be combined with other full adders or work on its own.

EQUATION FOR FULL ADDER:

$$S = (A \oplus B) \oplus C_i$$
$$C_o = (A \cdot B) + (C_i \cdot (A \oplus B)) = (A \cdot B) + (B \cdot C_i) + (C_i \cdot A)$$

EQUIPMENT / REQUIREMENT:

- IC 7486
- 7408 IC.
- 7432 IC.
- Breadboard
- LED
- 0-5 VOLT DC Power Supply.

PROCEDURE:

Construct the combinational circuit as diagram given figure 7.1. After constructing both of these circuits, observe the output and complete the truth table.

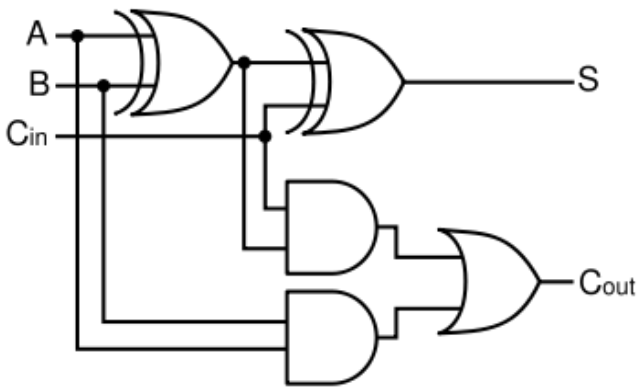

Figure 7.1 Full adder circuit

OBSERVATION TABLE:

A	B	Cī	Co	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

Table 7.1

QUESTIONS / RESULTS:

1. A full adder can be constructed from CONNECTING TWO HALF adders by connecting *A* and *B* to the input of _CARRY OUT___ half adder
2. Full adder performs the arithmetic addition of _3_ inputs bits.
3. The HALF adder is one that does not take a carry-in from another adder.

CONCLUSION:

A full adder is a digital circuit that performs addition. ...

A full adder adds three one-bit binary numbers, two operands and a carry bit. The adder outputs two numbers, a sum and a carry bit. The term is contrasted with a half adder, which adds two binary digits.