Dr. Kumar Balwant Singh. Page-7.

May '97 Wednesday, Sem II, Physics

3) BINARY PARALLEL ADDER :- By making use of a number of full adders we can build binary adder of any length. The symbol for binary adder is given below. In this the solid arrows are standard representation of a moving word. This figure shows that two binary numbers or word A and B are added to get a sum and a final carry. A circuit for a parallel binary adder is shown in fig(b) below.

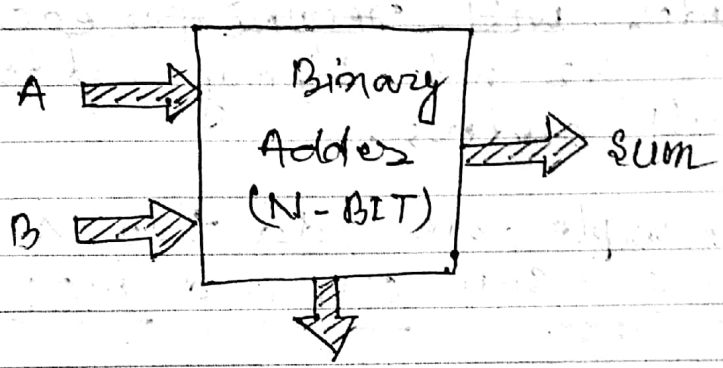
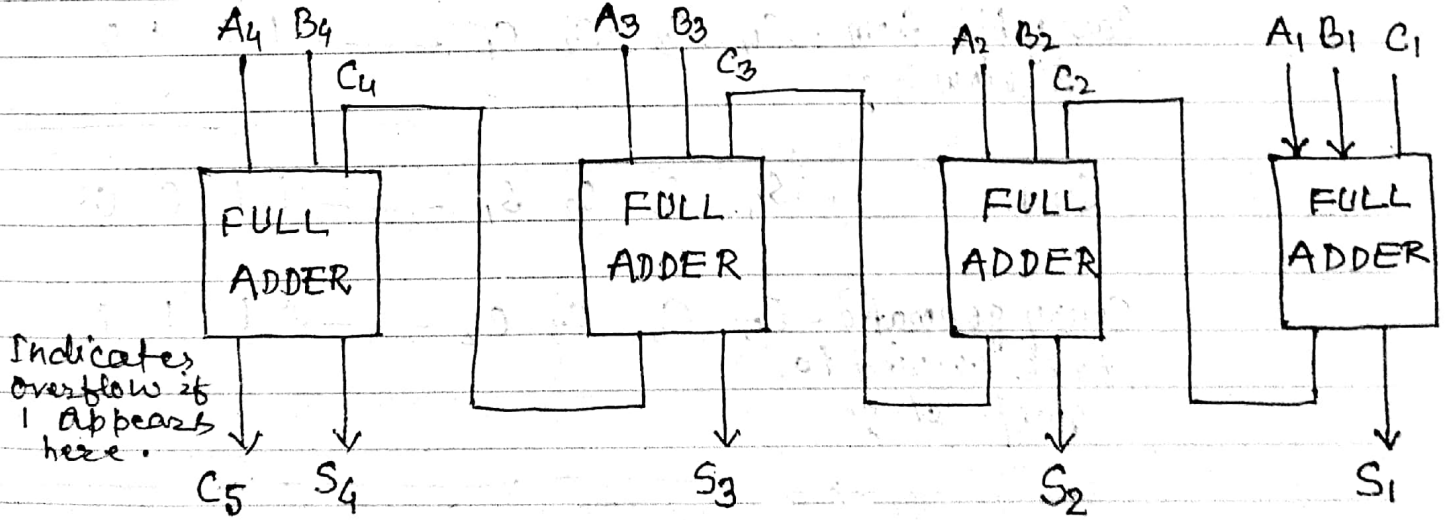


Fig. (a) Symbol for binary adder.



S = Sum

Fig-(b) Parallel Binary Adder.

This circuit can add any two 4 bit binary integers. The addend (the number to which other number is to be added) bits are named as A_1, A_2, A_3 and A_4 and the augend (the no. which is to be added) bits are represented as B_1, B_2, B_3 and B_4. Carry is denoted by C_1, C_2, C_3 and C_4 and Sum is S_1, S_2, S_3 and S_4 respectively.

The basic configuration as discussed above can be extended to any number of bits requiring one additional full adder for each additional bit. A 32 bit binary adder will require 32 full adders.

For example, we add two 4 bits binary integers say 0111 and 0101.

Addend bits - A_4 A_3 A_2 A_1	——	0	1	1	1
Augend bits - B_4 B_3 B_4 B_1	——	0	1	0	1
Carry bit from previous stage - C_4 C_3 C_2 C_1	——	1	1	1	0
Sum - S_4 S_3 S_2 S_1	——	1	1	0	0
Carry generated to be carried to next stage - C_5 C_4 C_3 C_2	——	0	1	1	1