

Exercise - 8

AIM: To create carry look ahead Adder.

PROCEDURE:-

$$C_{i+1} = a_i b_i + (a_i \oplus b_i) \cdot C_i$$

$$S_i = (a_i \oplus b_i) \oplus C_i$$

$$C_{i+1} = G_i + P_i C_i \quad ; \quad S_i = P_i \oplus C_i$$

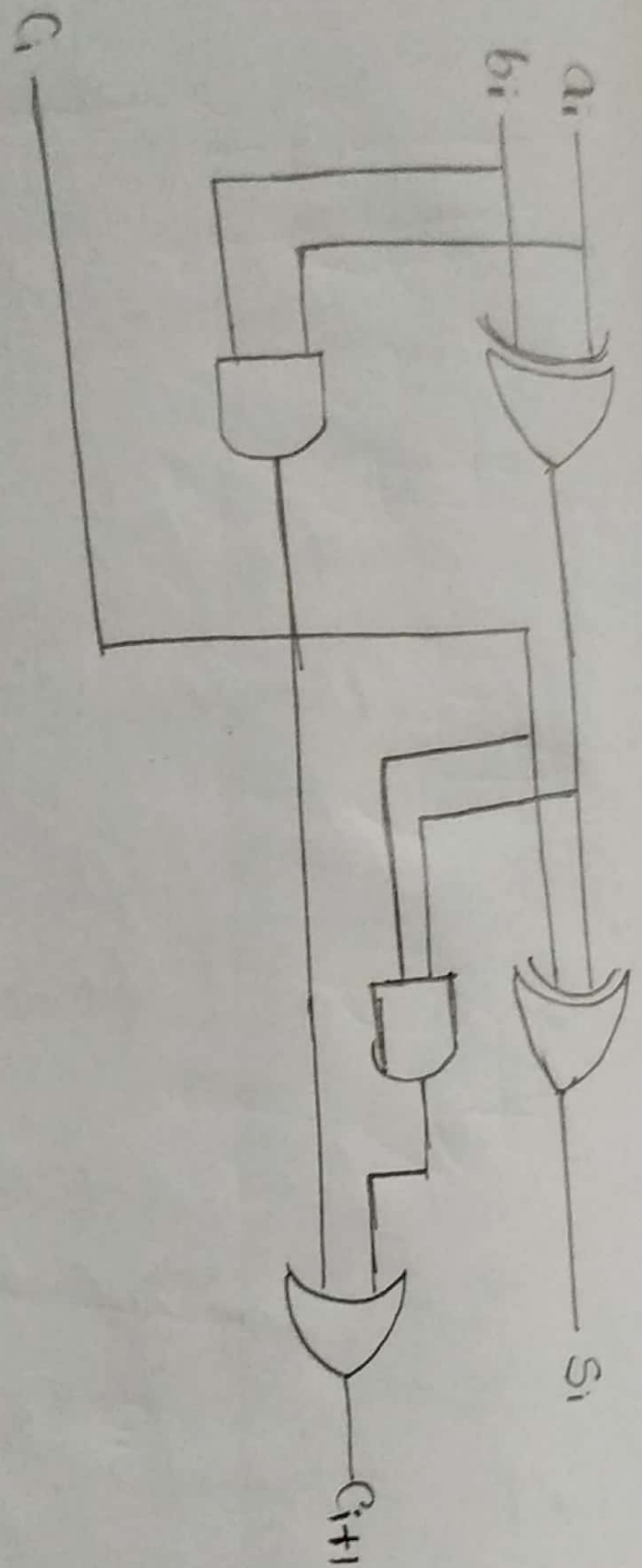
$$G_i = a_i b_i \quad ; \quad P_i = a_i \oplus b_i$$

P_i is a result of a_i and b_i XOR gate.

G_i is a result of a_i and b_i AND gate.

$C_{i+1} = G_i$ is AND gate input and P_i is input of AND gate.

S_i is the result of the input of P_i and XOR gate of C_i .



Carry Lookahead Adder (CLA)

$$C_1 = G_0 + P_0 C_0$$

$$C_2 = G_1 + P_1 G_0 + P_1 P_0 C_0$$

$$C_3 = G_2 + P_2 G_1 + P_2 P_1 G_0 + P_2 P_1 P_0 C_0$$

$$C_4 = G_3 + P_3 G_2 + P_3 P_2 G_1 + P_3 P_2 P_1 G_0 + P_3 P_2 P_1 P_0 C_0$$

