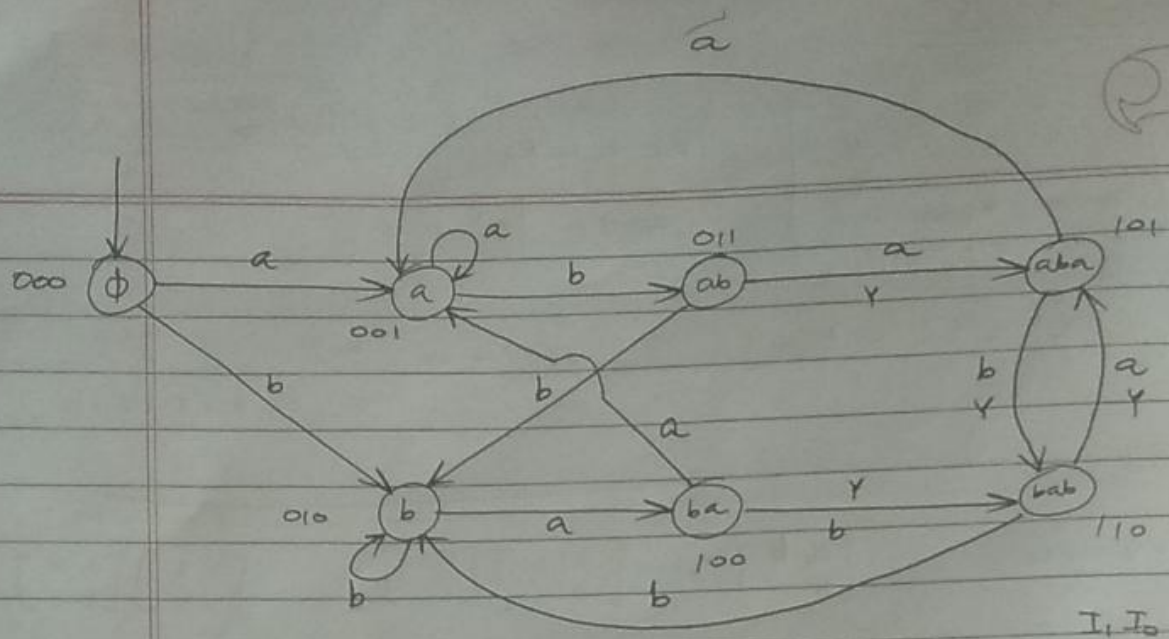


Let Next state be $N_2 N_1 N_0$ Input

Prev. state be $P_2 P_1 P_0$

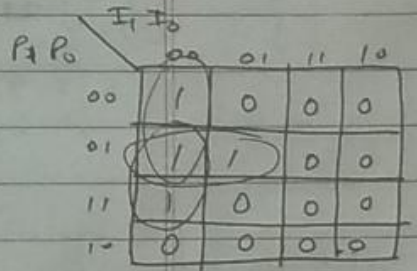
$I_1 I_0$

00 – a

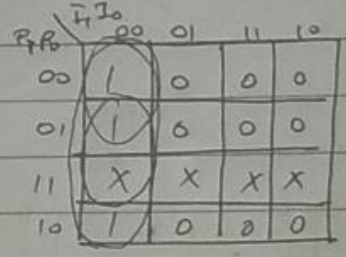
01 – b

10 – $\bar{a}$

11 – $\bar{b}$ reset



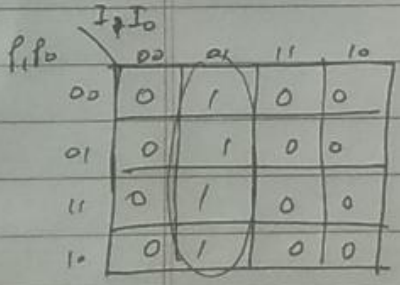
$P_2 = 0$



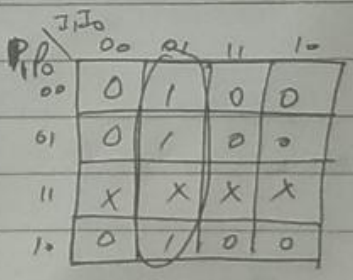
$P_2 = 1$

——— (1.)

(N_0)



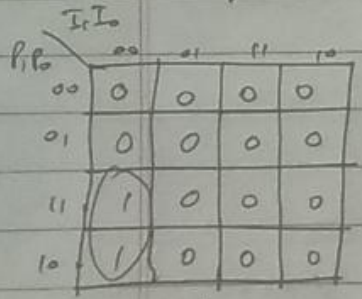
$P_2 = 0$



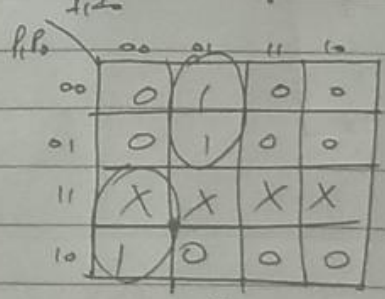
$P_2 = 1$

——— (2)

(N_1)



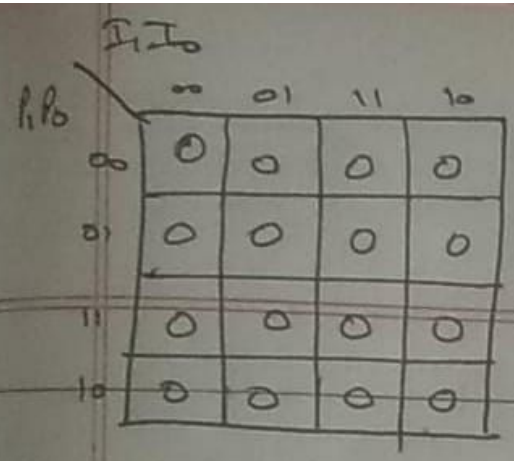
$P_2 = 0$



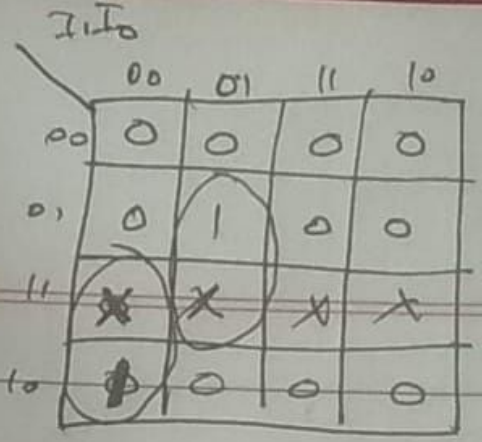
$P_2 = 1$

——— (3)

(N_2)



$P_2 = 0$



$P_2 = 1$

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output

$Y = 1$, $N = 0$

Minimized expression for each :-

$$N_0 = P_2\bar{I}_1\bar{I}_0 + \bar{P}_1\bar{I}_1\bar{I}_0 + P_0\bar{I}_1\bar{I}_0 + \bar{P}_2\bar{P}_1P_0\bar{I}_1$$

$$N_1 = \overline{I_1 I_0}$$

$$N_2 = P_1\bar{I}_1\bar{I}_0 + P_2\bar{P}_1\bar{I}_1I_0$$

$$OP = P_2P_1\bar{I}_1\bar{I}_0 + P_2P_0\bar{I}_1I_0$$