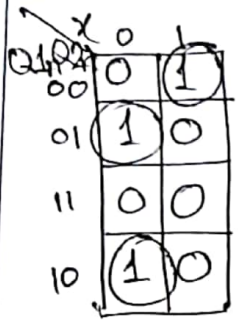
1.

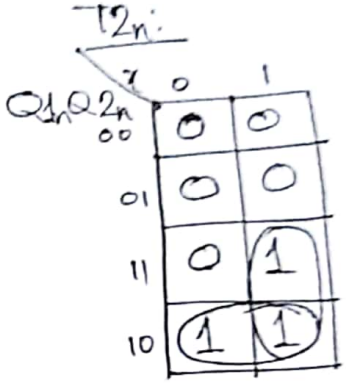
Present State $Q1_nQ2_n$	Next State $Q1_{n+1}$ $Q2_{n+1}$		Flip-Flop Inputs				Output, z_1z_2	
	$x=0$	$x=1$	$x=0$ $T1_n$	$T2_n$	$x=1$ $T1_n$	$T2_n$	$x=0$	$x=1$
00	00	10	0	0	1	0	11	01
01	11	01	1	0	0	0	00	11
11	11	10	0	0	0	1	01	10
10	01	11	1	1	0	1	10	01

$T1_n$:



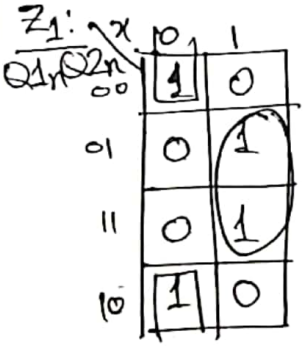
$T1_n = Q1_n'Q2_n'x + Q1_n'Q2_nx' + Q1_nQ2_n'x'$

$T2_n$:



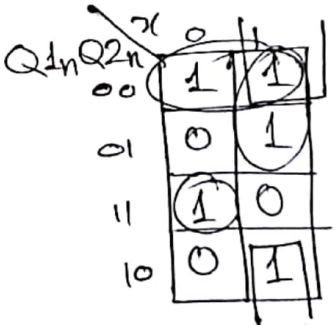
$T2_n = Q1_nQ2_n' + Q1_nx$

z_1:



$z_1 = Q2_n'x' + Q2_nx$

z_2:



$z_2 = Q1_n'Q2_n' + Q1_n'x + Q2_n'x + Q1_nQ2_nx'$

Logic Diagram