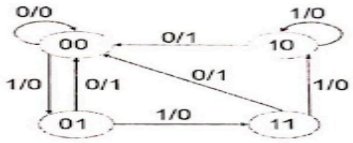
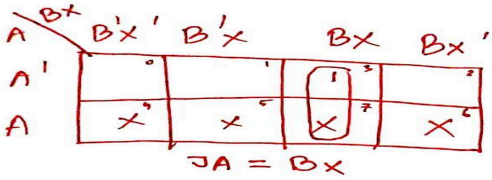
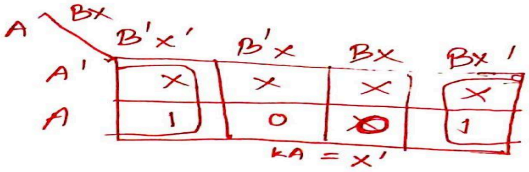
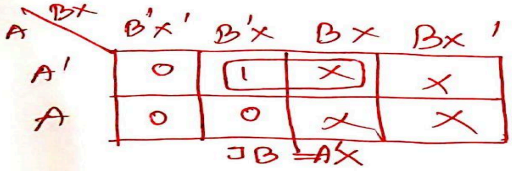
1.CO4	Given state diagram as follows, get the sequential circuit using JK flip-flop:

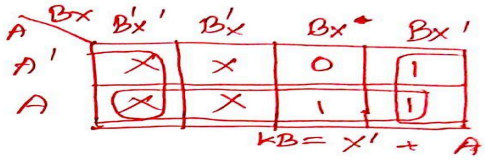


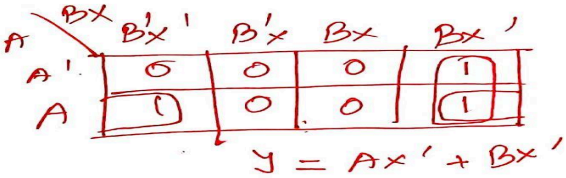
Present State A	Present State B	Input x	Next State A^+	Next State B^+	Output y	Flip Flop Inputs JA	KA	JB	KB
0	0	0	0	0	0	0	X	0	X
0	0	1	0	1	0	0	X	1	X
0	1	0	0	0	1	0	X	X	1
0	1	1	1	1	0	1	X	X	0
1	0	0	0	0	1	X	1	0	X
1	0	1	1	0	0	X	0	0	X
1	1	0	0	0	1	X	1	X	1
1	1	1	1	0	0	X	0	X	1

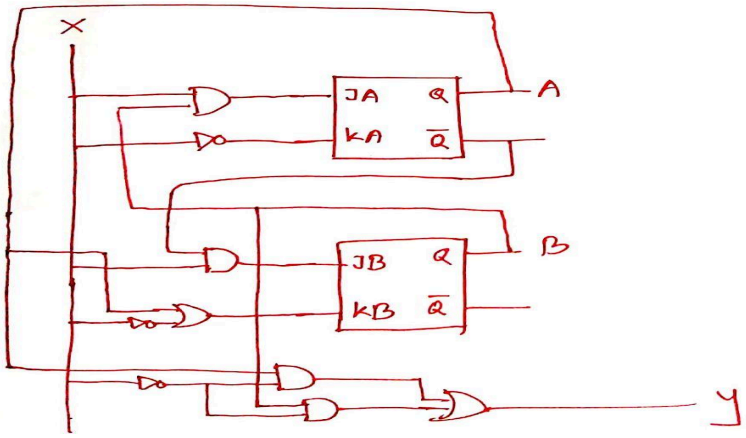




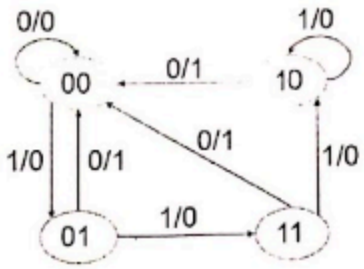








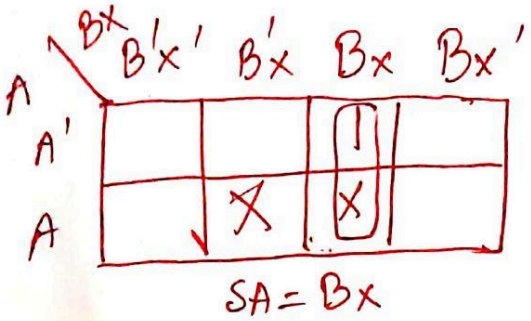
1.CO4	Given state diagram as follows, get the sequential circuit using SR flip-flop:



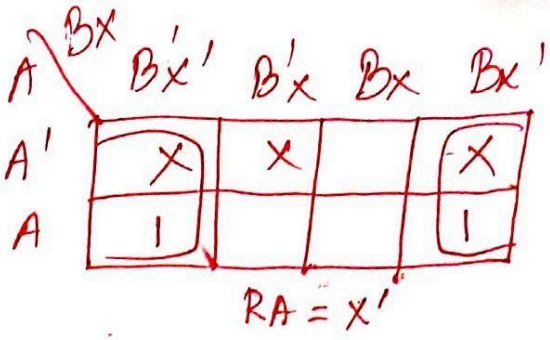
Present State		Input	Next State		Output
A	B	x	A^+	B^+	y
0	0	0	0	0	0
0	0	1	0	1	0
0	1	0	0	0	1
0	1	1	1	1	0
1	0	0	0	0	1
1	0	1	1	0	0
1	1	0	0	0	1
1	1	1	1	0	0

Flip Flop Inputs

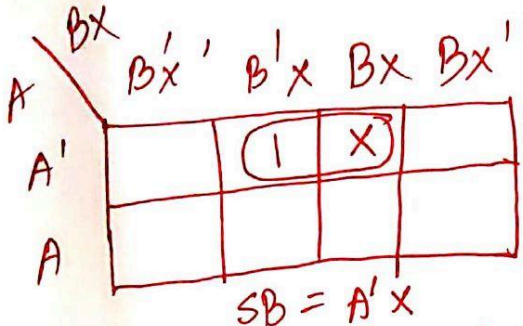
SA	RA	SB	RB
0	X	0	X
0	X	1	0
0	X	0	1
1	0	X	0
0	1	0	X
X	0	0	X
0	1	0	1
X	0	0	1



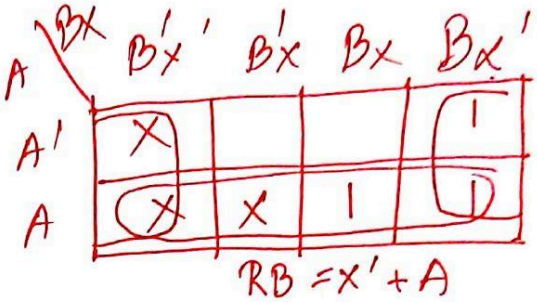
$SA = Bx$



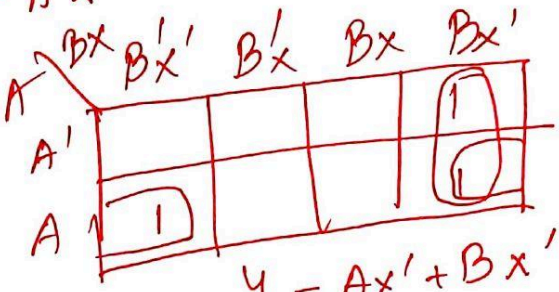
$RA = x'$



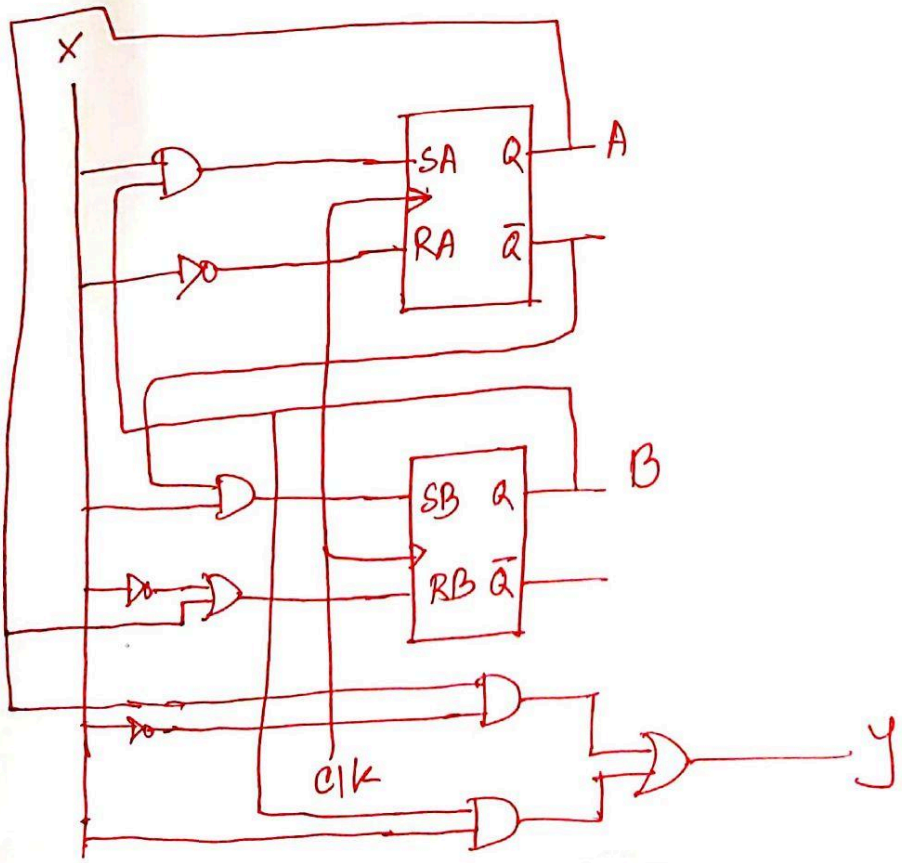
$SB = A'x$



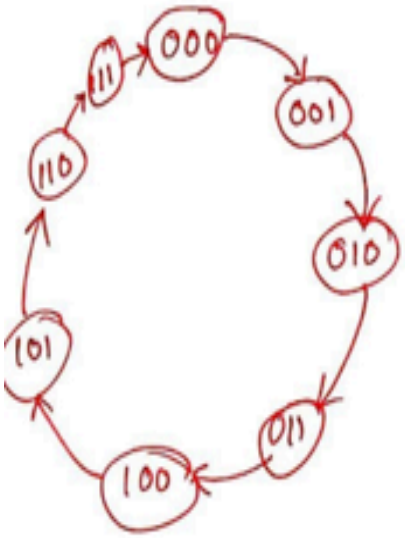
$RB = x' + A$



$y = Ax' + Bx'$



1.CO4	Implement the following counter using JK FF: 0→1→2→3→4→5→6→7→0



Present State

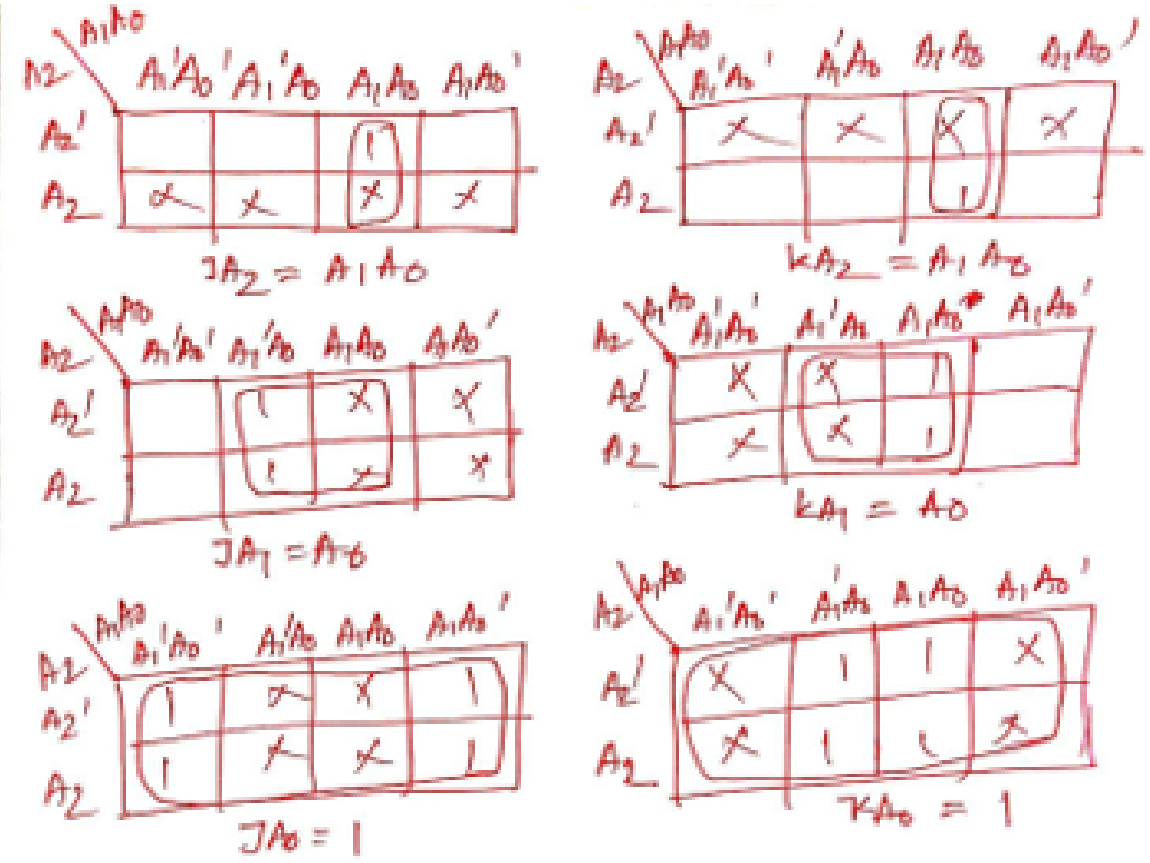
A_2	A_1	A_0
0	0	0
0	0	1
0	1	0
0	1	1
1	0	0
1	0	1
1	1	0
1	1	1

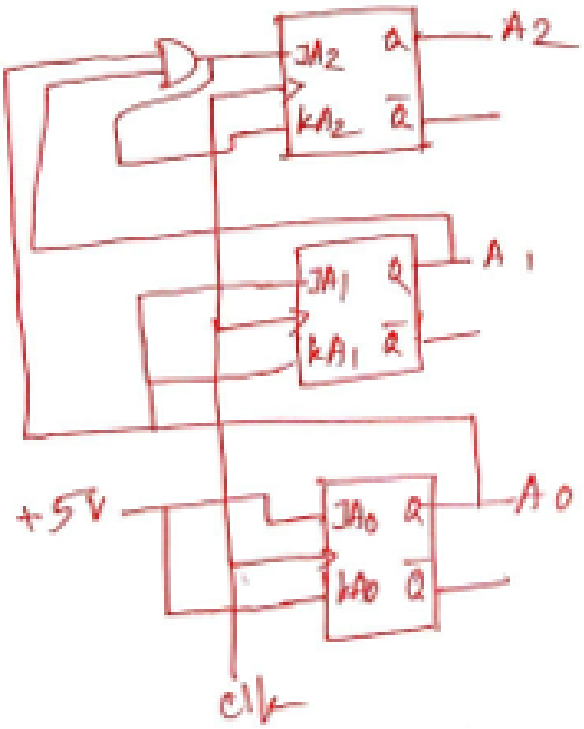
Next State

A_2^+	A_1^+	A_0^+
0	0	1
0	1	0
0	1	1
1	0	0
1	0	1
1	1	0
1	1	1
0	0	0

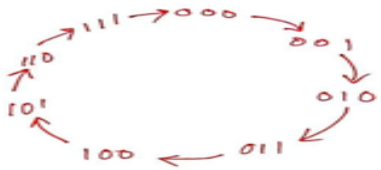
Flip Flop Inputs

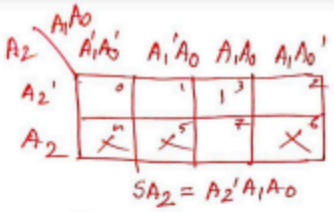
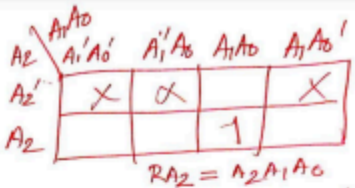
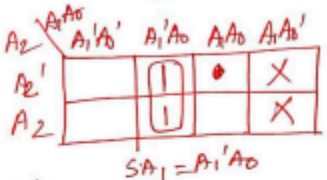
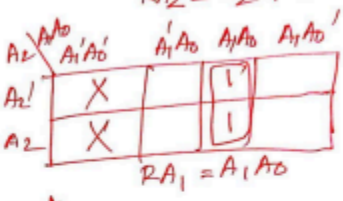
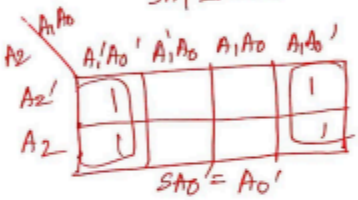
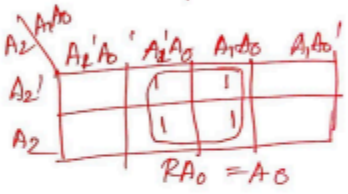
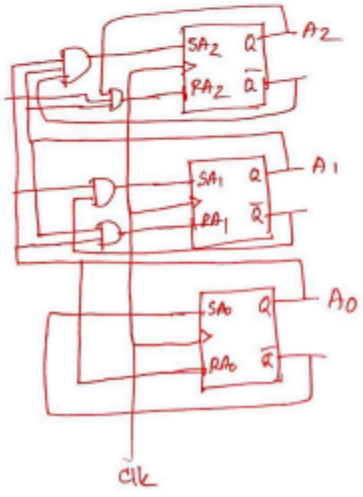
JA_2	kA_2	JA_1	kA_1	JA_0	kA_0
0	X	0	X	1	X
0	X	1	X	X	1
0	X	X	0	1	X
1	X	X	1	X	1
X	0	0	X	1	X
X	0	1	X	X	1
X	0	X	0	1	X
X	1	X	1	X	1


$JA_2 = A_1A_0$
$KA_2 = A_1A_0$
$JA_1 = A_0$
$KA_1 = A_0$
$JA_0 = 1$
$KA_0 = 1$


JA2
kA2
Q
$\bar{Q}$
A2
JA1
kA1
A1
+5V
JA0
kA0
A0
clk

1.C04 Implement the following counter using SR FF: 0→1→2→3→4→5→6→7→0



Present State			Next State		
A_2	A_1	A_0	A_2^+	A_1^+	A_0^+
0	0	0	0	0	1
0	0	1	0	1	0
0	1	0	0	1	1
0	1	1	1	0	0
1	0	0	1	0	1
1	0	1	1	1	0
1	1	0	1	1	1
1	1	1	0	0	0

Flip Flop Inputs					
SA_2	RA_2	SA_1	RA_1	SA_0	RA_0
0	x	0	x	1	0
0	x	1	0	0	1
0	x	x	0	1	0
1	0	0	1	0	1
x	0	0	x	1	0
x	0	1	0	0	1
x	0	x	0	1	0
0	1	0	1	0	1