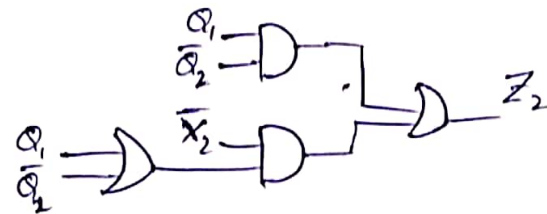
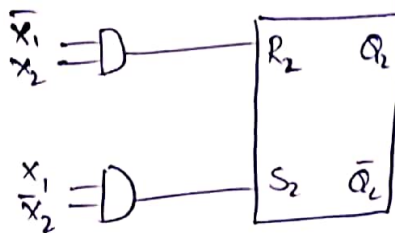
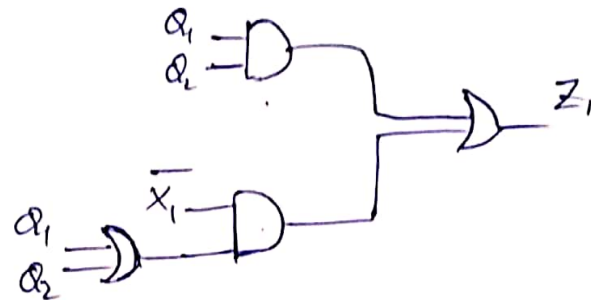
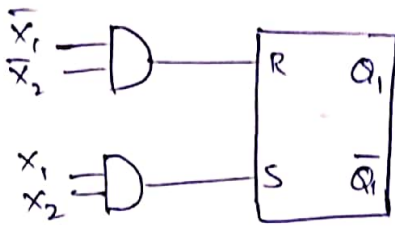


8/4/19

Asynchronous CircuitsInternal State - Q_1, Q_2

$$Z_1 = Q_1 Q_2 + \bar{x}_1 (Q_1 + Q_2)$$

Total State - Q_1, Q_2, x_1, x_2

$$Z_2 = Q_1 \bar{Q}_2 + \bar{x}_2 (Q_1 + \bar{Q}_2)$$

Total State $Q_1 Q_2 x_1 x_2$	R_1 $\bar{x}_1 \bar{x}_2$	S_1 $x_1 x_2$	R_2 $\bar{x}_1 x_2$	S_2 $x_1 \bar{x}_2$	Q_1^+ $(S_1 + R_1' Q_1)$	Q_2^+ $(S_2 + R_2' Q_2)$	Z_1	Z_2
0 0 0 0	1	0	0	0	0	0	0	1
0 0 1 0	0	0	0	1	0	1	0	1
0 1 1 0	0	0	0	1	0	1	0	0
0 1 1 1	0	1	0	0	1	1	1	0

$Q_2 \backslash X_1 X_2$	00	01	11	10
00	00	00	10	01
01	01	00	11	01
11	01	10	11	11
10	00	10	10	11

$Q_1^+ Q_2^+$

$S_0 = 00$ $S_2 = 10$

$S_1 = 01$ $S_3 = 11$

$$Q_1^+ = S_1 + \overline{R_1} Q_1$$

$$= x_1 x_2 + (\overline{x_1} \overline{x_2}) Q_1$$

$$Q_2^+ = S_2 + \overline{R_2} Q_2$$

$$= x_1 \overline{x_2} + (\overline{x_1} x_2) Q_2$$

$X_1 X_2$	00	01	11	10
$S_0 (00)$	S_0	S_0	S_2	S_1
$S_1 (01)$	S_1	S_0	S_3	S_1
$S_3 (11)$	S_1	S_2	S_3	S_3
$S_2 (10)$	S_0	S_2	S_2	S_3

Flow table

$Q_2 \backslash X_1 X_2$	00	01	11	10
00	01	00	00	01
01	10	10	00	00
11	11	10	10	11
10	11	11	01	01

Output table

$X_1 X_2 \Rightarrow 00 \rightarrow 10 \rightarrow 11 \rightarrow 01 \rightarrow 11 \rightarrow 10 \rightarrow 00$

$Z_1 Z_2 \Rightarrow 01 \rightarrow 01 \rightarrow 00 \rightarrow 00 \rightarrow 10 \rightarrow 10 \rightarrow 11 \rightarrow 01 \rightarrow 01 \rightarrow 11 \rightarrow 11 \rightarrow 10$