Problem 2

3 state bits ; 3 output bits

$Q_2\ Q_1\ Q_0$	$Q_2^+\ Q_1^+\ Q_0^+$	$D_2\ S_1\ R_1\ J_0\ K_0$	Out
0 0 0	0 0 1	0 0X 1 X	0 0 1
0 0 1	0 1 0	0 10 X1	0 1 1
0 1 0	0 1 1	0 X0 1 X	0 1 0
0 1 1	1 0 0	1 01 X1	1 1 0
1 0 0	1 0 1	1 0X 1X	1 1 1
1 0 1	0 0 0	0 0X X1	1 0 1
1 1 0	X X X	X XX XX	X X X
1 1 1	X X X	X XX XX	X X X

D_2:

Q_2Q_1 \ Q_0	0	1
00	0	0
01	0	1
11	X	X
10	1	0

$Q_0 Q_1$; $\bar{Q}_0 Q_2$

$D_2 <= \bar{Q}_0 Q_2 + Q_0 Q_1$

S_1:

Q_2Q_1 \ Q_0	0	1
00	0	1
01	X	0
11	X	X
10	0	0

$\bar{Q}_2 \bar{Q}_1 Q_0$

$S_1 <= \bar{Q}_2 \bar{Q}_1 Q_0$

R_1:

Q_2Q_1 \ Q_0	0	1
00	X	0
01	0	1
11	X	X
10	X	X

$Q_1 Q_0$

$R_1 <= Q_1 Q_0$

J_0:

Q_2Q_1 \ Q_0	0	1
00	1	X
01	1	X
11	X	X
10	1	X

1

$J_0 <= 1$ (V_{cc})

$K_0 <= 1$ (V_{cc})

Out_2 :

Q_2Q_1 \ Q_0	0	1
00	0	0
01	0	1
11	X	X
10	1	1

Q_1Q_0, Q_2

$Out_2 <= Q_1Q_0 + Q_2$

Out_1 :

Q_2Q_1 \ Q_0	0	1
00	0	1
01	1	1
11	X	X
10	1	0

$\bar{Q}_2Q_0$, Q_1, $\bar{Q}_0Q_2$

$Out_1 <= Q_1 + (\bar{Q}_2 \& Q_0)$

Out_0 :

Q_2Q_1 \ Q_0	0	1
00	1	1
01	0	0
11	X	X
10	1	1

$\bar{Q}_1$

$Out_0 <= \bar{Q}_1$