Slot - 1

1| (a)

	y_2	y_1
A	0	0
B	0	1
C	1	1
	d	d

3 states

Or,

	y_2	y_1
A	0	0
B	0	1
C	1	1
D	1	0

4 states

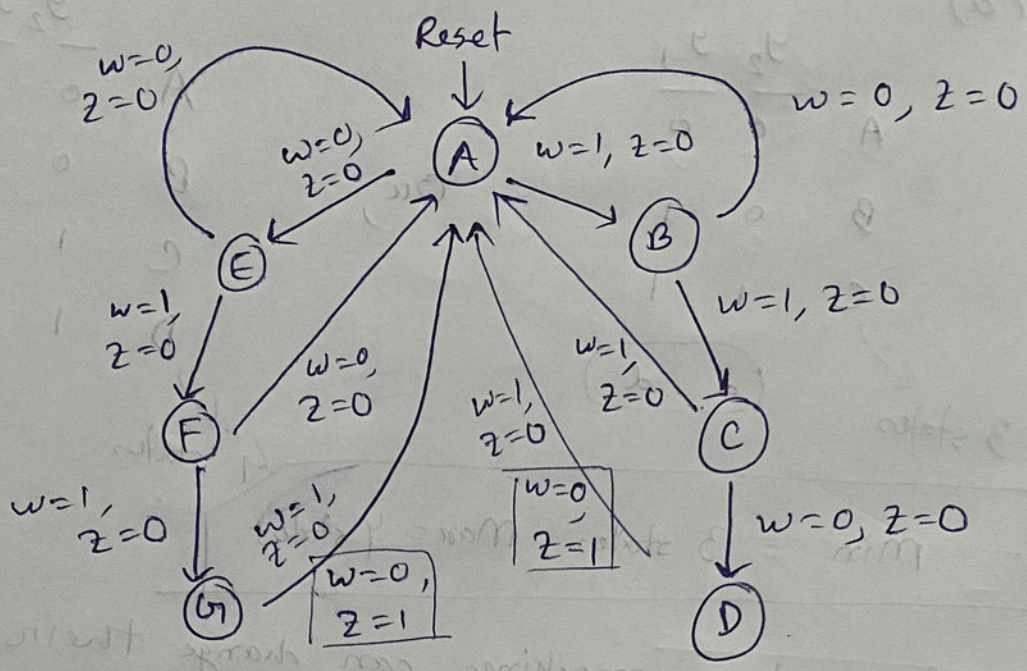
∴ Min = 3 states, Max = 4 states

b) Moore type machines can change their output only when there is a change in clock pulse. But Mealy type machines can change their output before the change in clock pulse if the input changes. That's why "Mealy type" machines are faster.

c) Whenever we have 'don't care' terms in K-map, we can easily take them 0/1 which will help us to convert our output expressions to simpler forms.

2)

a)



It has to be a Mealy type FSM as after the fourth clock pulse, the machine has to be again in the reset state.

b)

Present state $y_3 y_2 y_1$	Next state $Y_3 Y_2 Y_1$		Output z	
	$w=0$	$w=1$	$w=0$	$w=1$
A 0 0 0	E (1 1 0)	B (0 0 1)	0	0
B 0 0 1	A (0 0 0)	C (0 1 1)	0	0
C 0 1 1	D (0 1 0)	A (0 0 0)	0	0
D 0 1 0	A (0 0 0)	A (0 0 0)	1	0
E 1 1 0	A (0 0 0)	F (1 0 0)	0	0
F 1 0 0	A (0 0 0)	G (1 0 1)	0	0
G 1 0 1	A (0 0 0)	A (0 0 0)	1	0

c) Z:

$y_1 w$ \ $y_3 y_2$	00	01	11	10
00	0	(1)	0	0
01	0	0	0	0
11	0	0	$d=0$	0
10	0	0	$d=1$	1

$$\therefore Z = y_3 y_1 \bar{w} + \bar{y}_3 y_2 \bar{y}_1 \bar{w}$$