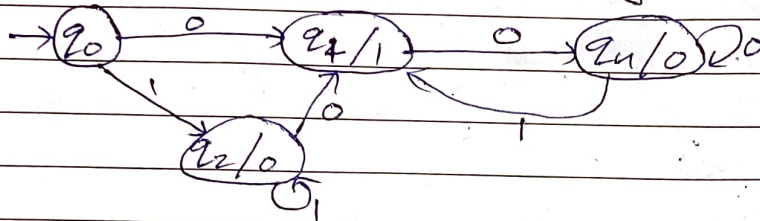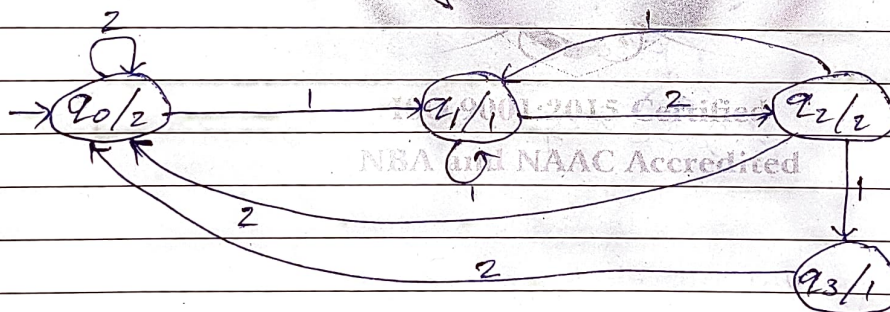Q.1. Design moore m/c for the following :-
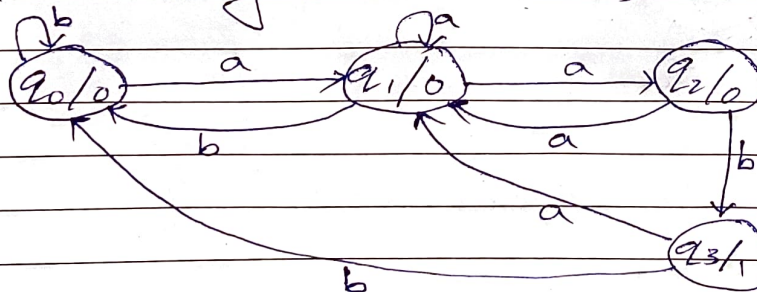a. Which will increment binary no. by 1
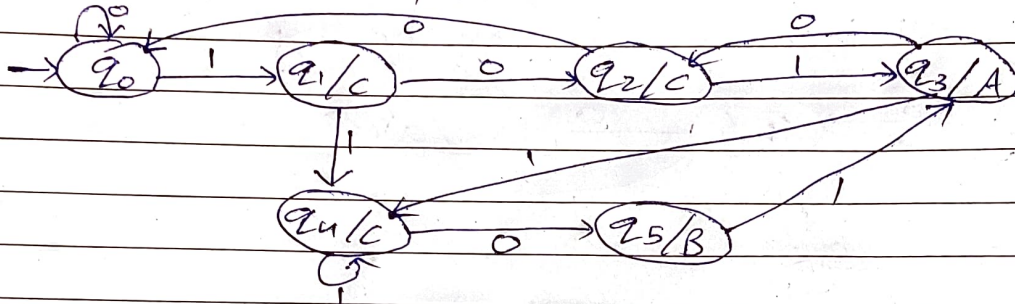

b. find two's Compliment of a binary no.

c. To connect substring 121 to 122 for strings having 012.

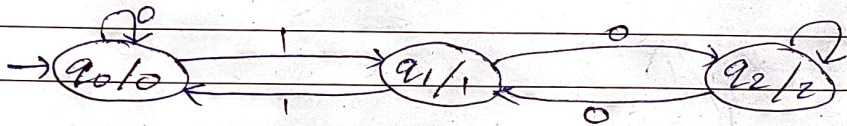d. Which counts the occurence of substring aab in a long time string over $\Sigma = \{a, b\}$

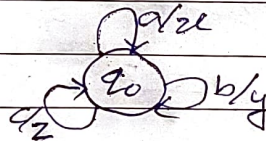e. $101 \rightarrow A$, $110 \rightarrow B$, other $\rightarrow C$

f. To determine residue mod 3 for binary no.

Q.2 Design Mealy Machine

a. Converts every a into u & every b to y & c to z

b. To change vowels to uppercase.

c. To get 2's compliment of number
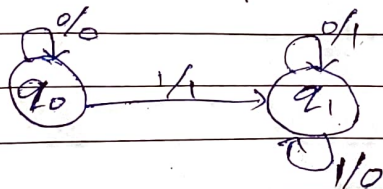
Q.3 Convert following moore into mealy.

a.
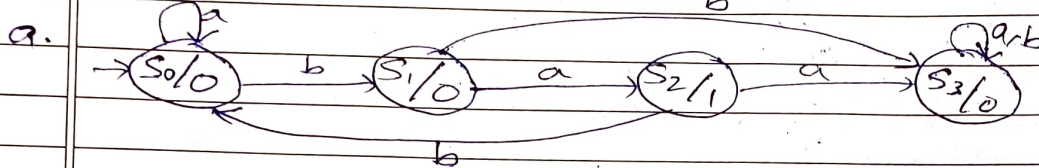
-Moore machine transition table

	a	b	o/p
S0	S0	S1	0
S1	S2	S3	0
S2	S3	S0	1
S3	S3	S3	0

-Mealy m/c t.t :

	a	o/p	b	o/p
S0	S0	0	S1	0
S1	S2	1	S3	0
S2	S3	0	S0	0
S3	S3	0	S3	0

-Mealy m/c :-

b.
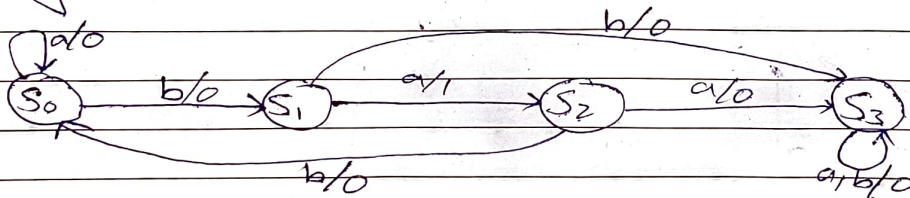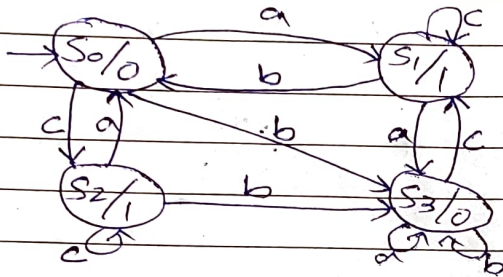
- Moore m/c t.t.

	a	b	c	%p
S₀	S₁	S₃	S₂	0
S₁	S₃	S₀	S₁	1
S₂	S₀	S₃	S₂	1
S₃	S₃	S₃	S₁	0

- Mealy m/c t.t. :-

	a		b		c	
S₀	S₁	1	S₃	0	S₂	1
S₁	S₃	0	S₀	0	S₁	1
S₂	S₀	0	S₃	0	S₂	1
S₃	S₃	0	S₃	0	S₁	1
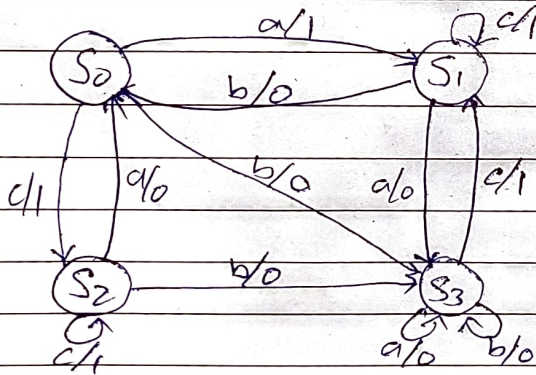
c.
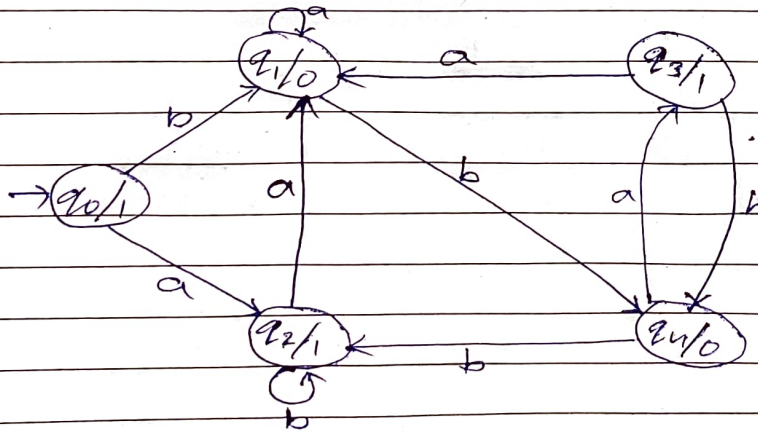
- Moore m/c t.t. :-

	a	b	q_p
q_0	q_2	q_1	1
q_1	q_1	q_4	0
q_2	q_1	q_2	1
q_3	q_1	q_3	1
q_4	q_3	q_4	0

- Mealy m/c t.t. :-

	a		b	
q_0	q_2	1	q_1	0
q_1	q_1	0	q_4	0
q_2	q_1	0	q_2	1
q_3	q_1	0	q_3	0
q_4	q_3	1	q_2	1
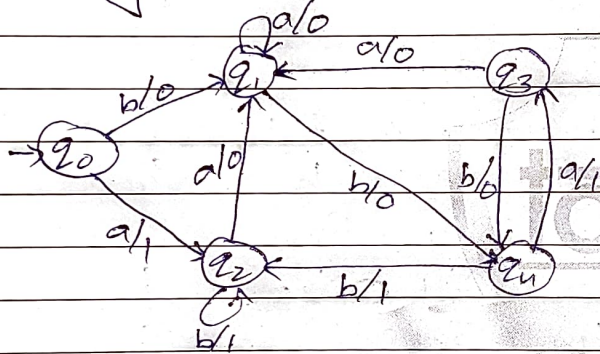
- Mealy m/c :-

Q.4 Convert following Mealy Machine into Moore m/c.

a.
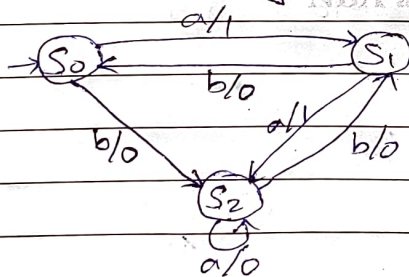
- Mealy m/c t.t. :-

	a		b	
S_0	S_1	1	S_2	0
S_1	S_2	1	S_0	0
S_2	S_2	0	S_1	0

- Moore m/c t.t. :-

	a	b	o/p
S_0	S_{11}	S_{20}	0
S_{10}	S_{21}	S_{00}	0
S_{11}	S_{21}	S_{00}	1
S_{20}	S_{20}	S_{10}	0
S_{21}	S_{20}	S_{10}	1
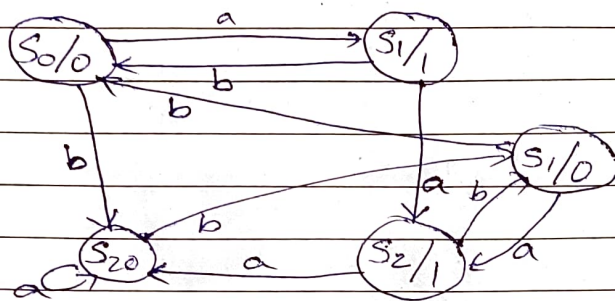
b.
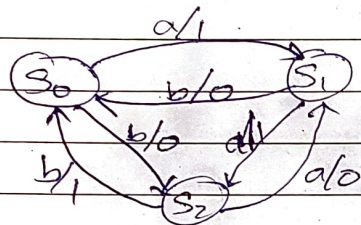
- Mealy m/c t.t :-

	a		b	
S_0	S_1	1	S_2	0
S_1	S_2	1	S_0	0
S_2	S_1	0	S_0	1

- Moore m/c t.t :-

		a	b	o/p
S_0	S_{00}	S_{11}	S_{20}	0
	S_{01}	S_{11}	S_{20}	1
S_1	S_{10}	S_{21}	S_{00}	0
	S_{11}	S_{21}	S_{00}	1
S_2	S_{20}	S_{10}	S_{01}	1
	S_{21}	S_{10}	S_{01}	1
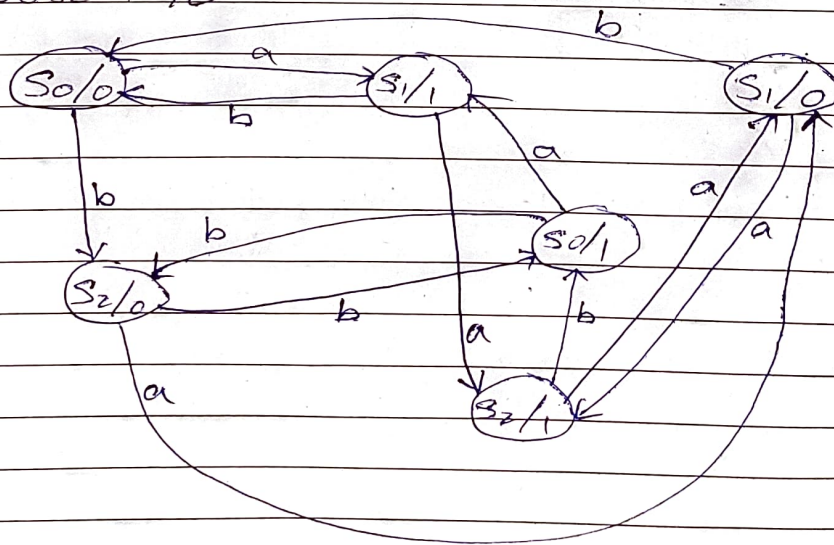
- Moore m/c :-

c. Mealy Machine :
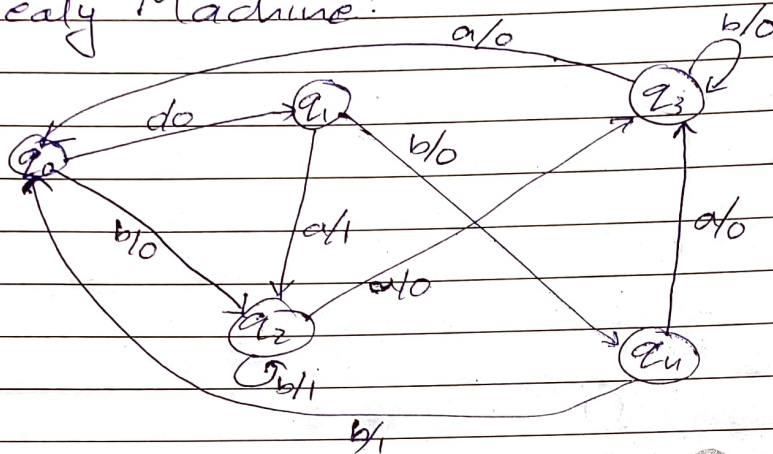
- Mealy M/c table.

	a		b	
q_0	q_1	0	q_2	0
q_1	q_2	1	q_4	0
q_2	q_3	0	q_2	1
q_3	q_0	0	q_3	0
q_4	q_3	0	q_0	1

- Moose M/c table :-

	a	b	o/p
q_{00}	q_{10}	q_{20}	0
q_{01}	q_{10}	q_{20}	1
q_1	q_{21}	q_4	0
q_{20}	q_3	q_{21}	0
q_{21}	q	q_{21}	1
q_3	q_{00}	q_3	0
q_4	q_3	q_{01}	0

- Moose M/c :-