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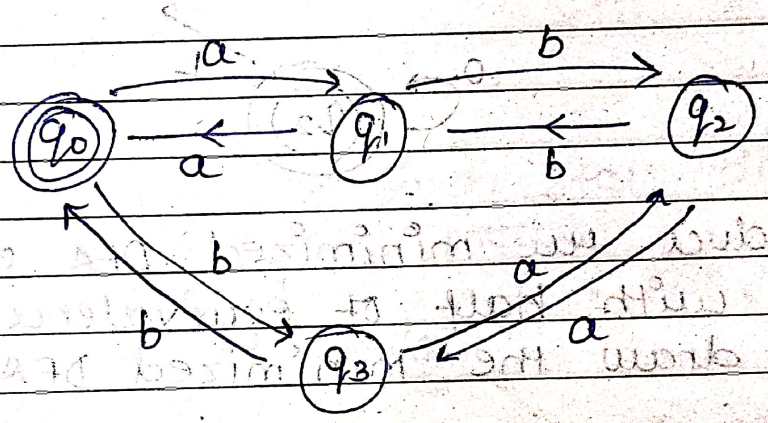
21SCSE1010260
section - 06

ASSIGNMENT - IAL

(1) Design Deterministic finite autometa which contain even a's & b's in a string Explain in 5 tables.

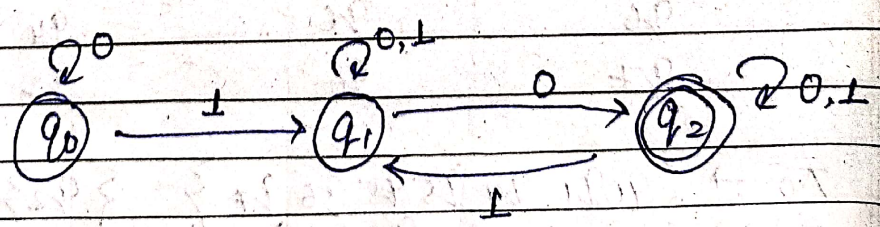
Soln. $\Sigma = \{ \epsilon, abab, aabb ---- \}$



Ques 2. Convert the following NFA to DFA?

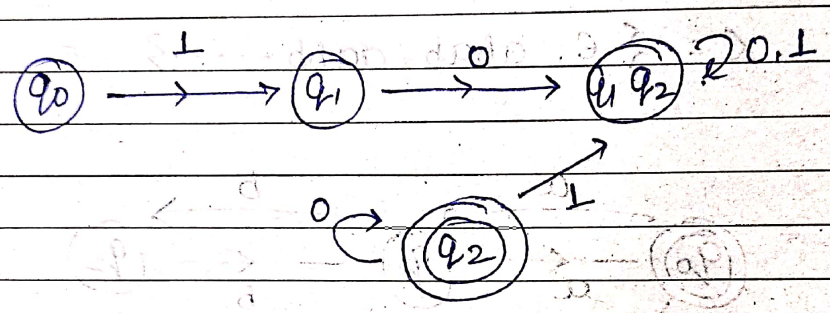
Ans. NFA

	0	1
q_0	q_0	q_1
q_1	$q_1 q_2$	q_1
q_2	q_2	$q_1 q_2$



Convert NFA to DFA

state	0	1
→ q_0	q_0	q_1
q_1	$q_1 q_2$	q_1
* q_2	q_2	$q_1 q_2$
* $q_1 q_2$	$q_1 q_2$	$q_1 q_2$



Q.3. Produce the minimized DFA of following DFA with half of equivalence method and also draw the minimized DFA?

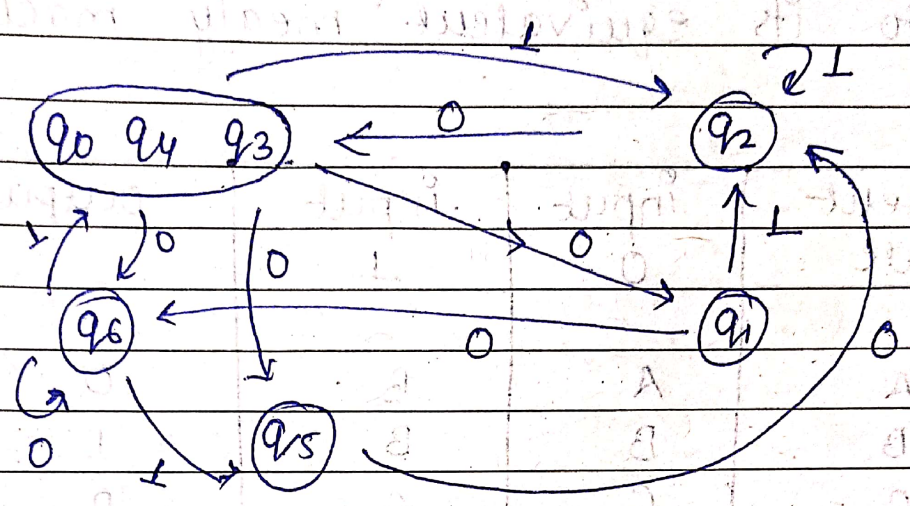
state	0	1
→ q_0	q_1	q_5
q_1	q_2	q_2
q_2	q_0	q_2
q_3	q_2	q_6
q_4	q_7	q_5
q_5	q_2	q_6
q_6	q_6	q_4
q_7	q_6	q_2

Ans.

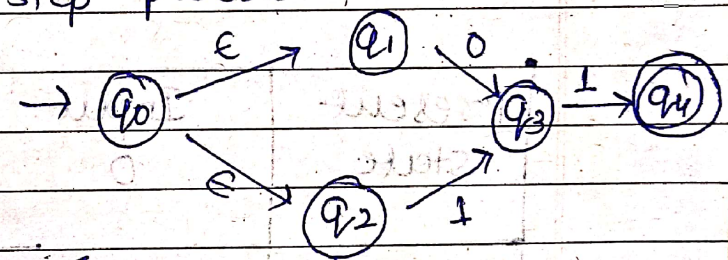
$\pi_0 \rightarrow \{q_0 q_1 q_4 q_5 q_5 q_6 q_7\} \{q_2\}$
$\pi_1 = \{q_0, q_4 q_5 q_6 q_7\} \{q_2\}$
$\pi_2 = \{q_0 q_4 q_5 q_6 q_7\}, \{q_2\} \{q_1\}$

$\pi_3 = \{q_3\}\ \{q_1\}\ \{q_5\}\ \{q_6, q_4, q_6\ q_7\}$

$\pi_4 = \{q_2\}\ \{q_1\}\ \{q_5\}\ \{q_6\}\ \{q_0, q_4, q_7\}$



4. Convert ε-NFA of given state diagram and show the step process.



Ans. ε-closure $(q_0) \rightarrow \{q_0, q_2, q_2\}$

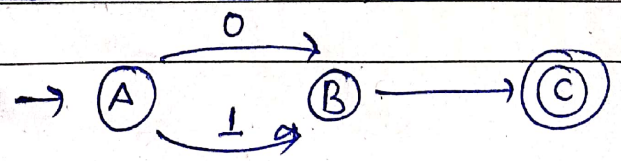
q/p : $0 \rightarrow \{q_3\}$, $1 \rightarrow \{q_2\}$

ε-closure $(q_3) \rightarrow \{q_3\}$ — (B)

q/p : $0 \rightarrow \{-\}$ $1 \rightarrow \{q_4\}$ — (C)

q/p $\rightarrow 0 \rightarrow \{-\}$ $1 \rightarrow \{-\}$

State	0	1
A	B	B
B	–	C
C	–	–



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Ad Q.5. Convert the following moore machine into its equivalent mealy machine.

Present state	input 0	input 1	output
A	A	B	0
B	B	B	1
C	C	C	0
D	D	C	1

Present state	Input 0	output	Input 1	output
A	A	0	B	1
B	C	0	B	1
C	B	1	C	0
D	C	0	C	0

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