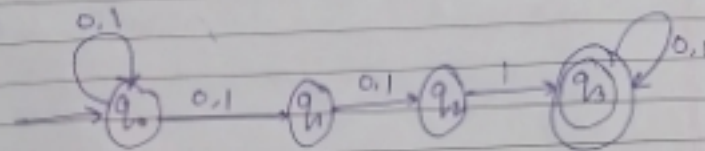


Q.6:- Design NFA for the binary strings, which accepts the strings in which third character of the string should be '1', over the  $\Sigma = \{0, 1\}$ .

Solution



Ques: Convert the following machine to moore machine.

Present state	input = a		input = b	
	N.s	output	N.s	output
→ A	B	0	A	1
B	C	0	D	1
C	D	1	B	0
D	E	1	A	1
E	A	1	E	0

Solution

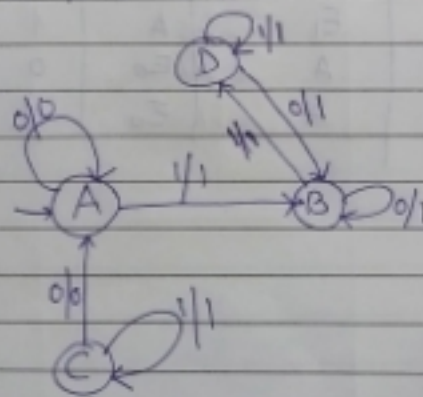
state	a	b	output
A	B	A	1
B	C	D	0
C	D	B	0
D	E	A	1
E <sub>0</sub>	A	E <sub>0</sub>	0
E <sub>1</sub>	A	E <sub>0</sub>	1

Ques 4: Convert the following moore machine to mealy machine.

Present state	Next state		output
	a	b	
→ A	A	B	0
B	B	D	1
C	A	C	1
D	B	D	1

Solution:-  
mealy Table

state	a	b
A	A, 0	B, 1
B	B, 1	D, 1
C	A, 0	C, 1
D	B, 1	D, 1



Ques 3:- Minimize the following DFA

P.S	a	b
$\rightarrow q_0$	<del><math>q_1</math></del>	$q_2$
$q_1$	$q_2$	$q_3$
$q_2$	$q_1$	$q_2$
$q_3$	$q_1$	$q_2$
$(q_4)$	$q_4$	$q_1$

Solution:-

$S_1$   $S_2$   
 $\{q_4\}$   $\{q_0, q_1, q_2, q_3\}$

Zero step

$q_0 \xrightarrow{a} S_2$   
 $q_0 \xrightarrow{b} S_2$

$q_1 \xrightarrow{a} S_2$   
 $q_1 \xrightarrow{b} S_2$

$q_2 \xrightarrow{a} S_2$   
 $q_2 \xrightarrow{b} S_2$

$q_3 \xrightarrow{a} S_2$   
 $q_3 \xrightarrow{b} S_2$

$q_4 \xrightarrow{a} S_1$   
 $q_4 \xrightarrow{b} S_2$

$\Rightarrow \boxed{\{q_4\} \{q_0, q_1, q_2, q_3\}}$

Q2:- Convert the following NFA to DFA.

P.S	N.S	
	0	1
$\rightarrow q_0$	$q_0, q_1$	$q_1, q_2$
$q_1$	$q_1, q_2$	$q_2, q_3$
$q_2$	$q_2, q_3$	$q_3, q_0$
$q_3$	$q_0, q_1$	$q_0, q_1$

Transition

state	0	1
$q_0$	$q_0, q_1$	$q_1, q_2$
$q_0, q_1$	$q_0, q_1, q_2$	$q_1, q_2, q_3$
$q_1, q_2$	$q_1, q_2, q_3$	$q_2, q_3, q_0$
$q_0, q_1, q_2$	$q_0, q_1, q_2, q_3$	$q_1, q_2, q_3, q_0$
$q_1, q_2, q_3$	$q_1, q_2, q_3, q_0$	$q_2, q_3, q_0, q_1$
$q_2, q_3, q_0$	$q_2, q_3, q_0, q_1$	$q_3, q_0, q_1, q_2$
$q_0, q_1, q_2, q_3$	$q_0, q_1, q_2, q_3$	$q_1, q_2, q_3, q_0$
$q_1$	$q_1, q_2$	$q_2, q_3$
$q_2, q_3$	$q_2, q_3, q_0, q_1$	$q_3, q_0, q_1$
$q_0, q_1, q_2$	$q_2, q_3, q_0, q_1$	$q_2, q_3, q_0, q_1$
$q_2$	$q_2, q_3$	$q_3, q_0$
$q_3, q_0$	$q_0, q_1$	$q_0, q_1, q_2$
$q_3$	$q_0, q_1$	$q_0, q_1$



Ques 1:- Design DFA for the strings, in which the third character of the strings should be 'c' and also last character of the string should be 'b' over the  $\Sigma = \{a, b, c\}$ .

Solution

