Question :1 Kleene's Theorem
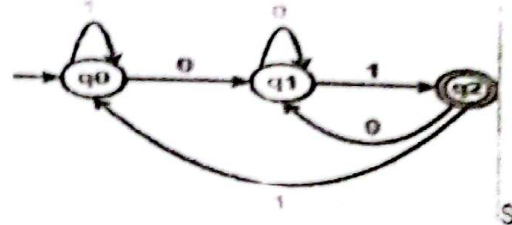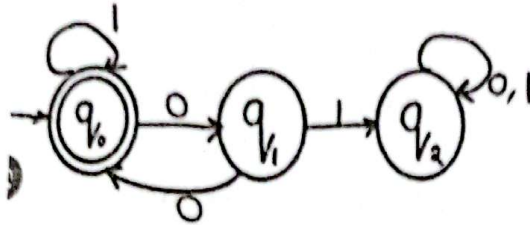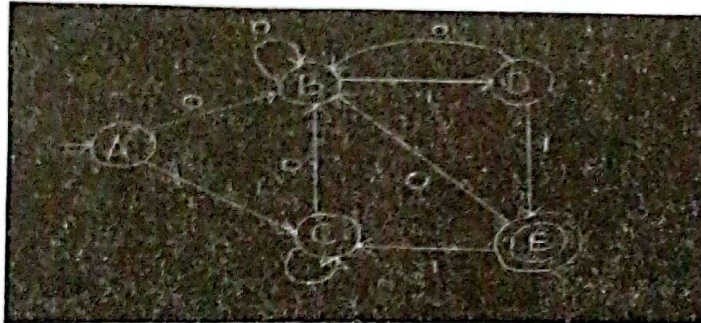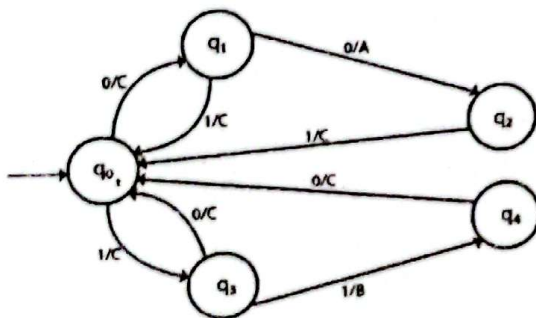
Find concatenation of give DFA1 and DFA2, consider q0 as initial state.

Question :2 Minimized Given DFA.

Question:3. Convert the following mealy machine in equivalent Moore machine.

Question 4: Mealy Machine

a. **Design the Mealy/Moore Machine for the following scenario**

ATM is a computerized machine that provides bank customers to gain access to their accounts using magnetic encoded plastic card and code number. It enables the customer to perform online transactions without involving cashier, clerk, and bank teller. The customer makes cash withdrawal, check account balances, transfer money as well as purchase prepaid mobile phone credit by using ATM card. Typical PIN based ATM has following processes:
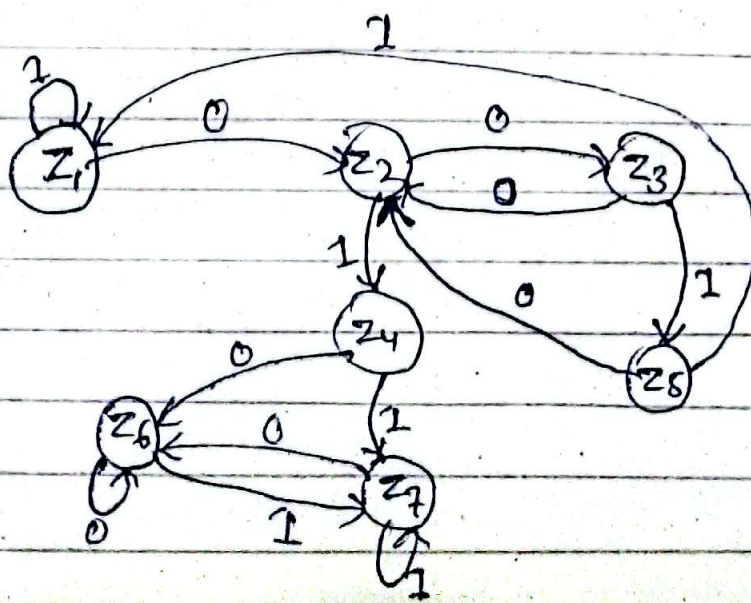
D1

$FF1 = J$ and $FF2 = \bar{K}J$

old States	New States	
S	0	1
$J_0\bar{q}_0 = z_1$	$J_1\bar{q}_1 = z_2$	$J_0\bar{q}_0 = z_1$
$J_1\bar{q}_1 = z_2$	$J_0\bar{J}_1 = z_3$	$J_2\bar{J}_2 = z_4$
$J_0\bar{J}_1 = z_3$	$J_1\bar{J}_1 = z_2$	$J_0\bar{J}_2 = z_5$
$J_2\bar{J}_2 = z_4$	$J_2\bar{J}_1 = z_6$	$J_2\bar{J}_0 = z_7$
$J_0\bar{J}_2 = z_5$	$J_1\bar{J}_1 = z_2$	$J_0\bar{J}_0 = z_1$
$J_2\bar{J}_1 = z_6$	$J_2\bar{J}_1 = z_6$	$J_2\bar{J}_0 = z_7$
$J_2\bar{J}_0 = z_7$	$J_2\bar{J}_1 = z_6$	$J_2 J_0 = z_7$

$\downarrow$

old	New	
S	0	1
z_1	z_2	z_1
z_2	z_3	z_4
z_3	z_2	z_5
z_4	z_6	z_7
z_5	z_2	z_1
z_6	z_6	z_7
z_7	z_6	z_7

(5)

2.:-
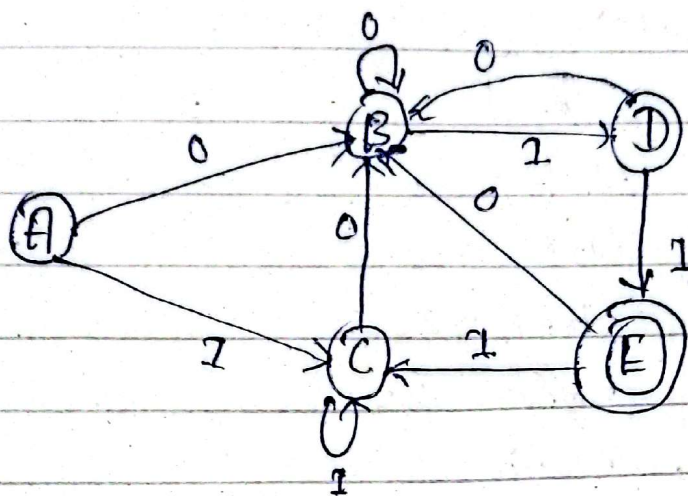
S_i	0	1	
A	B	C	
B	B	D	
C	B	C	
D	B	E	
E	B	C	

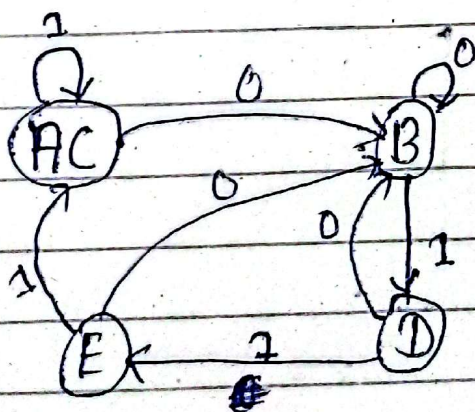ABν, ACν, AD

$\pi_0 = \{A, B, C, D\} \{E\}$
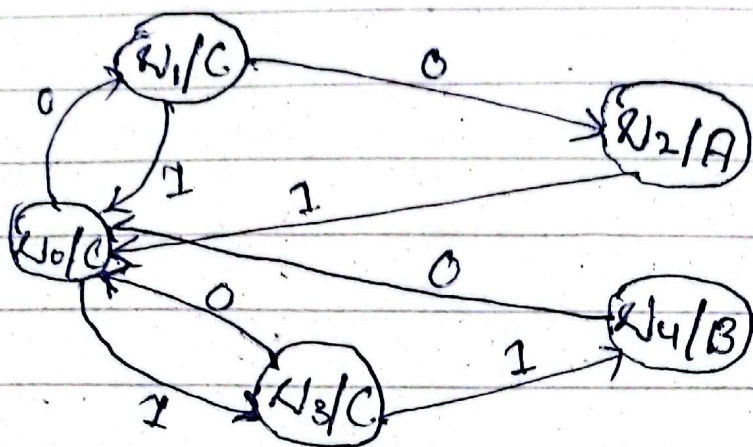
$\pi_1 = \{A, B, C\} \{D\} \{E\}$

$\pi_2 = \{A, C\} \{B\} \{D\} \{E\}$

$\pi_3 = \{A, C\} \{B\} \{D\} \{E\}$

5

Q3:-

⑤