

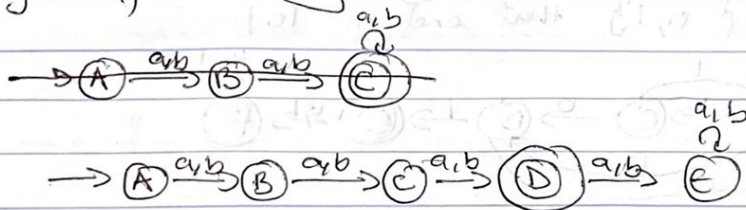
Arshina Aframeen . B

18/SEP/01/099

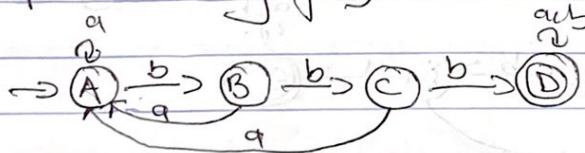
Q1) Automata theory is the study of abstract machines and automata, as well as the computational problems that can be solved by them. A deterministic finite automata (DFA) is represented by a 5-tuple  $\langle Q, \Sigma, \delta, q_0, F \rangle$  where

- Q is a finite set of states
- $\Sigma$  is the finite set of symbols
- $\delta$  is the transition function
- $q_0$  is the start state
- F is a set of states of Q

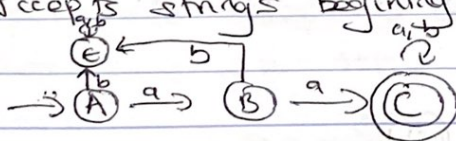
Q2) DFA that accepts set of strings over  $\{a, b\}$  such that  
i) length of the string is 3



ii) Accepts sub-string of 3 consecutive b's

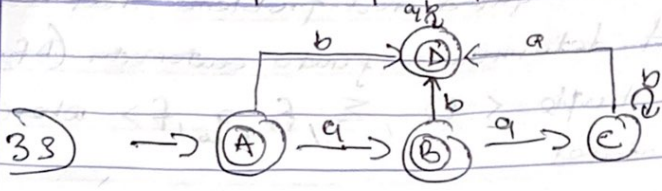


iii) Accepts strings beginning with a



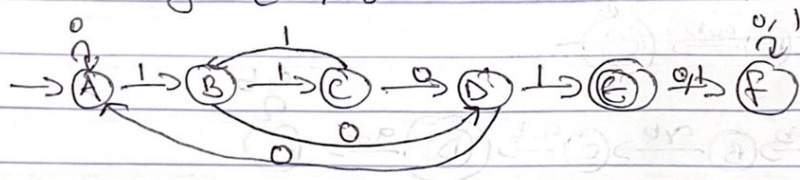
ii) Transition table for ii

	a	b
A	A	B
B	B	C
C	C	C

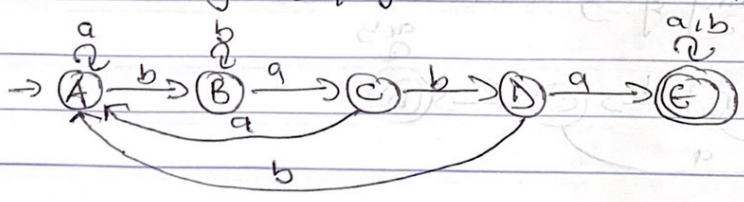


	a	b
A	B	D
B	C	D
C	D	C

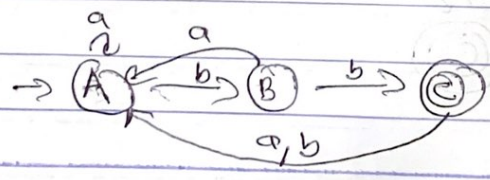
34) DFA that accepts a language over  $\{0,1\}$  that end in  $101$



ii) all strings  $\{a,b\}$  that contains the string  $baba$

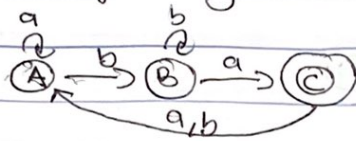


35) DFA accepting the language of strings over  $\{a,b\}$  ending with  $bb$



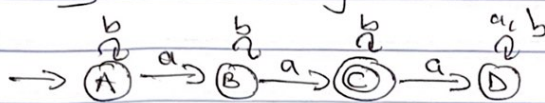


36)  $L_1 = \text{Set of strings over } \{a, b\} \text{ ending in } ba$

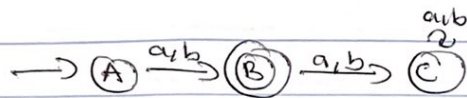


	a	b
A	A	B
B	C	B
C	A	A

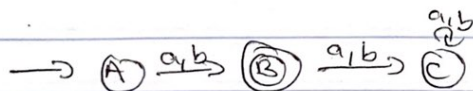
37) DFA for all set of strings over  $\{a, b\}$  such that  
 i) The string contains only 2 a's



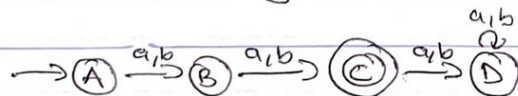
ii)  $w \in \{a, b\}^* \mid |w| = 1 \pmod 3$



iii)  $w \in \{a, b\}^* \mid |w| = 1 \pmod 2$

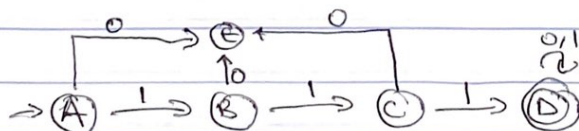


iv) Length of string is at most 2

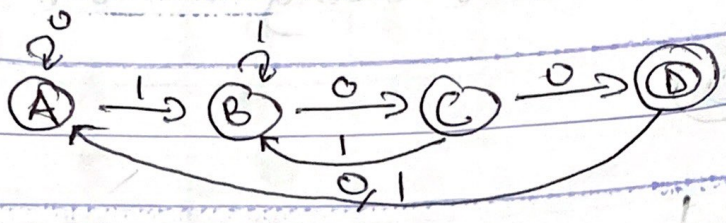


38) DFA that accepts a language over all string  $\{0, 1\}^*$

i) That begins with 111



ii) That ends with 100



iii) That contains 101

