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18/SCI 01/099

CSC 304

1) A finite automata is the simplest form of computation, it has very limited memory. It is an abstract machine that can be in exactly one of a finite number of states at a time.

2) A deterministic finite automata (DFA) is represented formally by a 5-tuple i.e  $\langle \delta, Q, \Sigma, q_0, f \rangle$  where:

$Q$  = set of all states

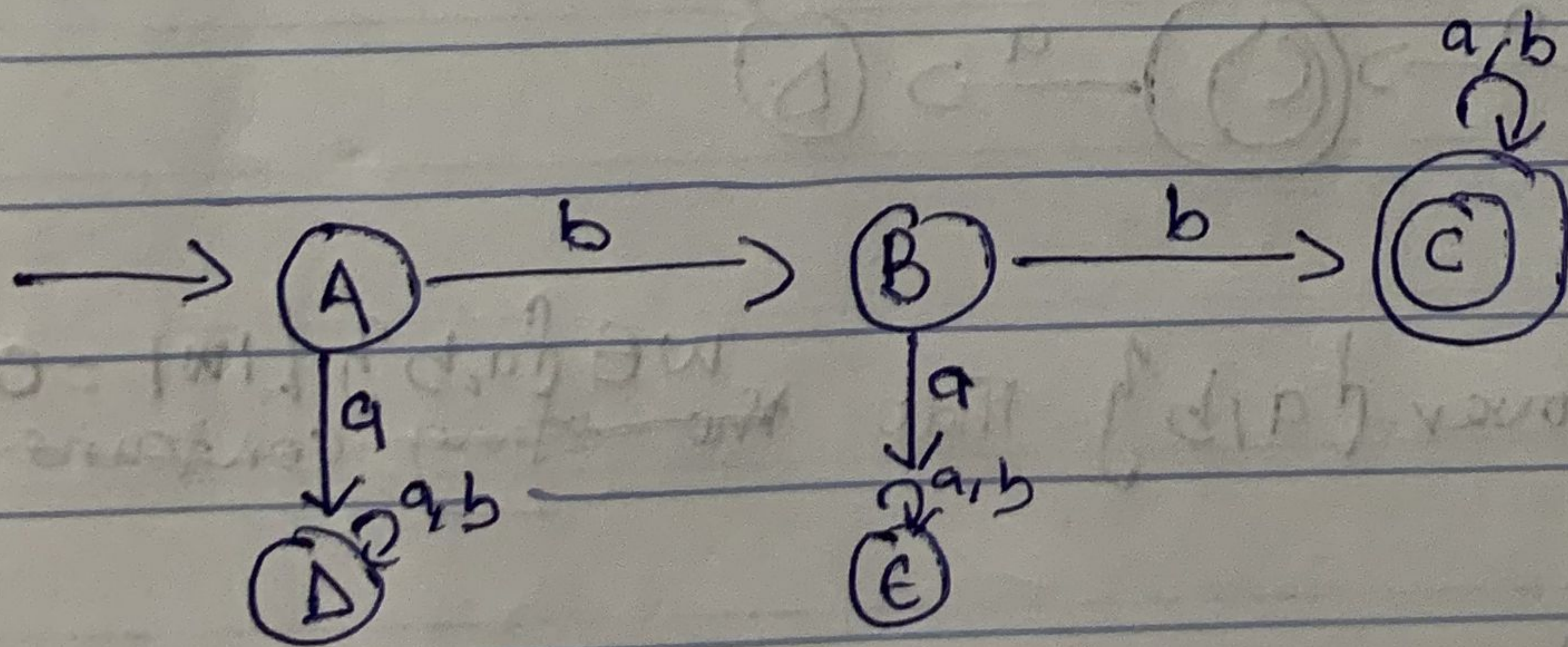
$\Sigma$  = inputs

$q_0$  = Initial state

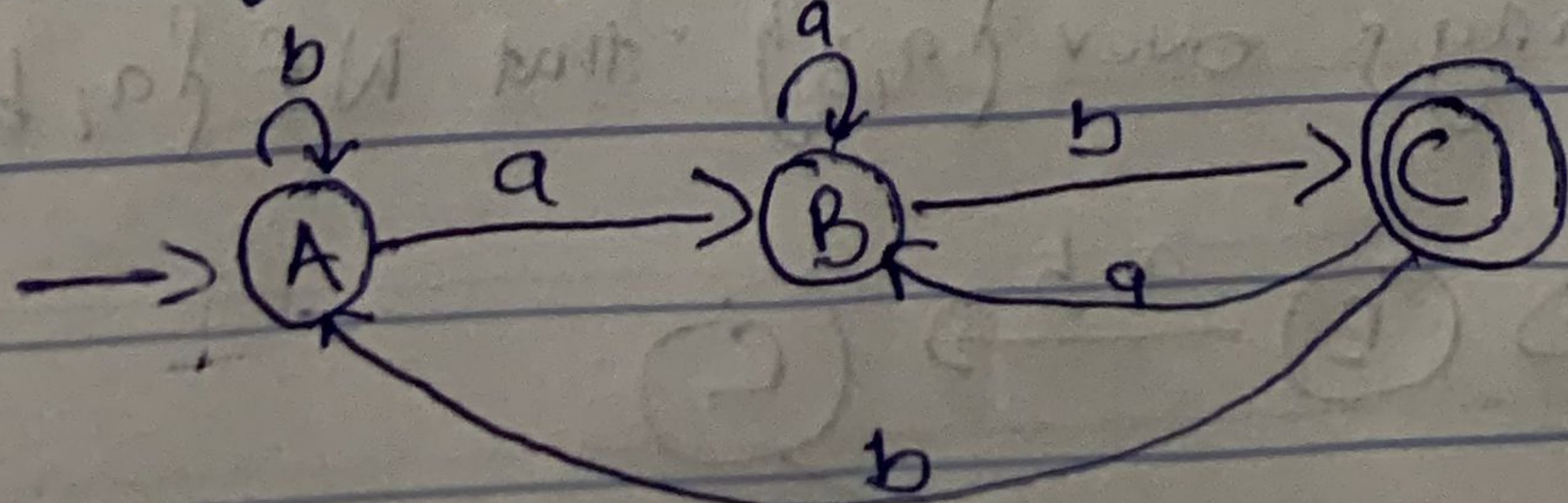
$f$  = set of final states

$\delta$  = transition function

3)  $L =$  Set of all strings starting with bb  
 $L = \{ bb, bba, bbab, bbaa, \dots \}$



4)  $L =$  set of all strings ending with ab  
i.e  $\{ ab, aab, bab, bbaab, \dots \}$

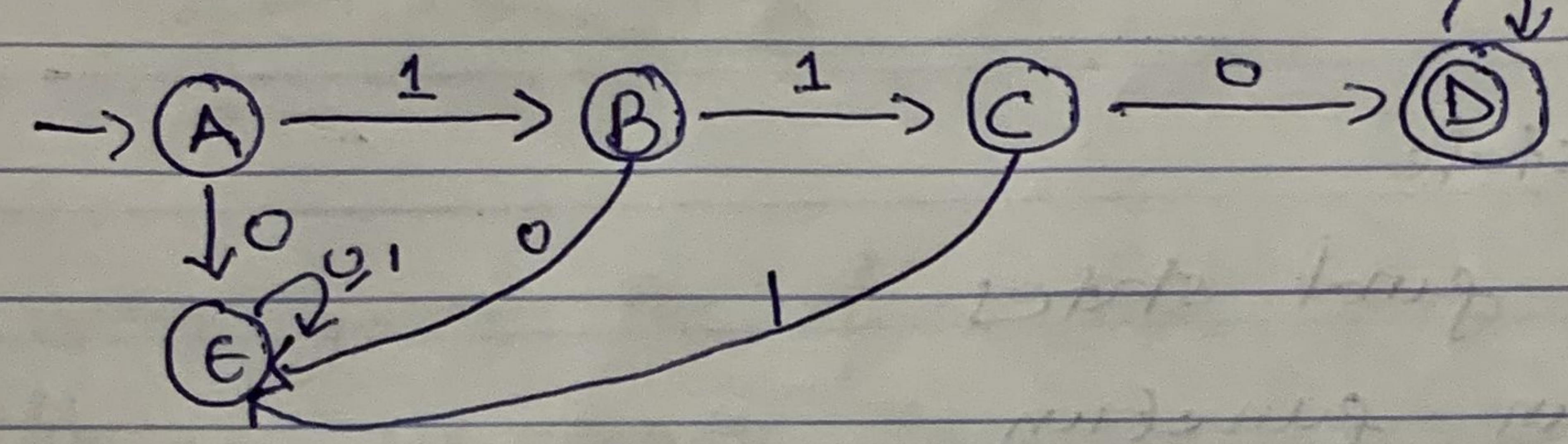


$Q = \{A, B, C\}$   
 $\Sigma = \{a, b\}$   
 $q_0 = A$   
 $f = C$   
 $\delta =$

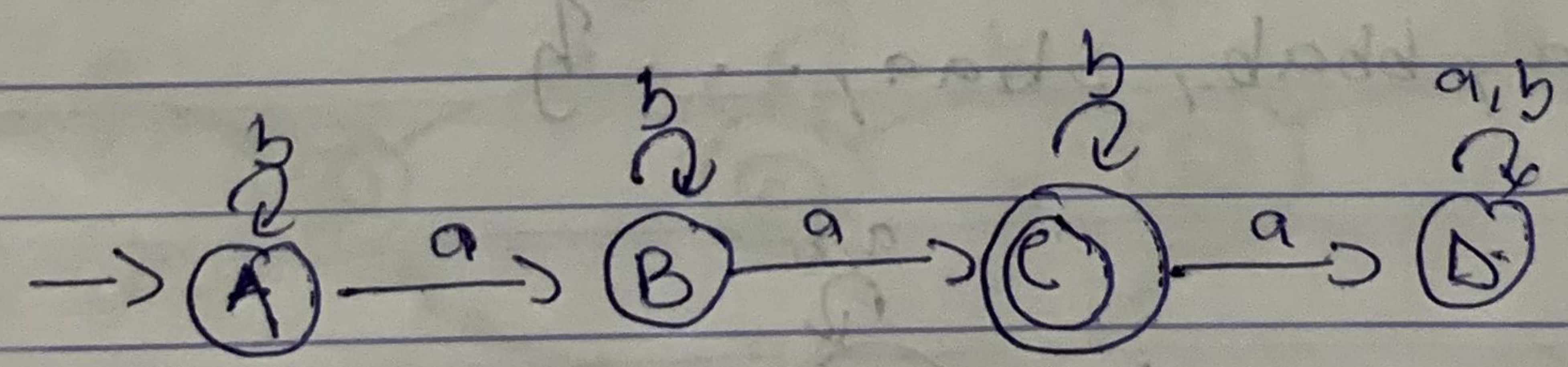
	a	b
A	B	A
B	B	C
C	B	A

w)  $L =$   
~~ab~~  $mos$

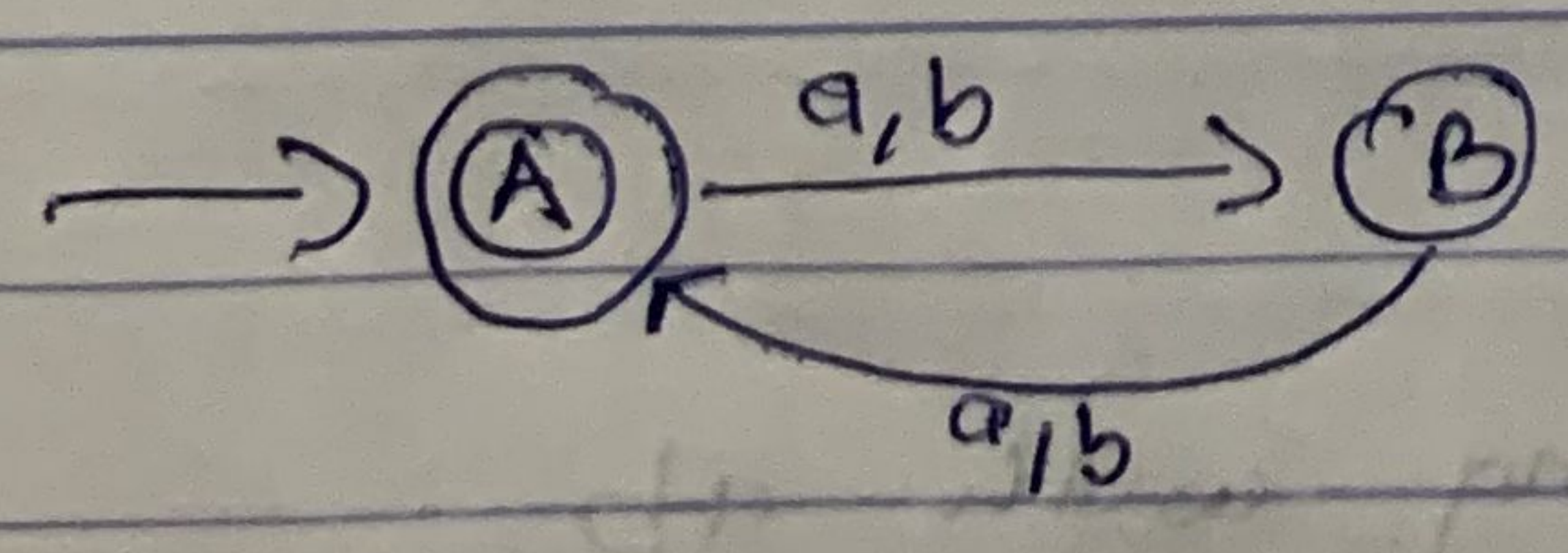
4  $L =$  set of all strings that begin with 110



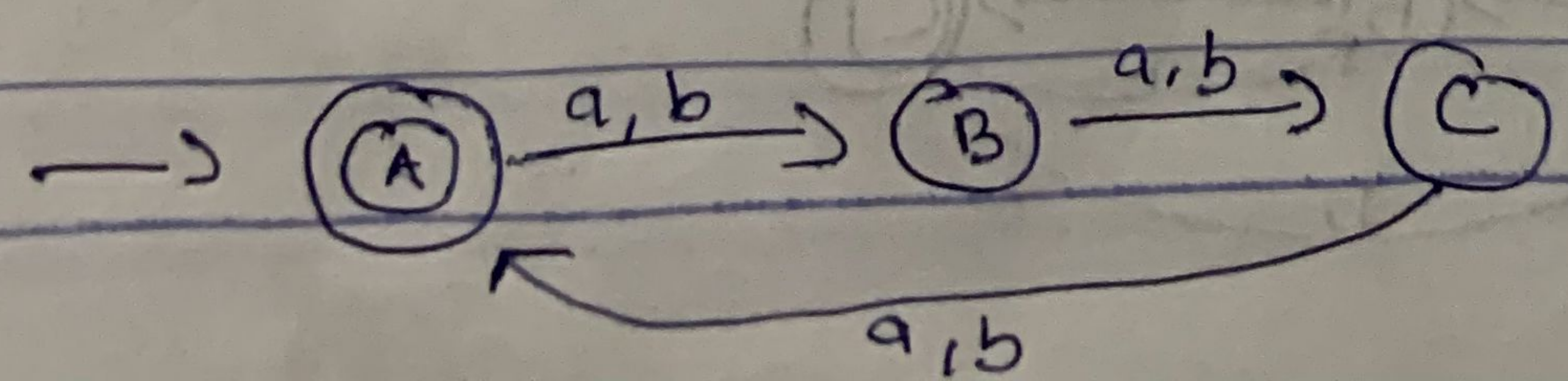
5 i)  $L =$  set of all strings over  $\{a, b\}$  that the string contains only 2 a's



ii)  $L =$  set of all strings over  $\{a, b\}$  that  $w \in \{a, b\}^*$   $|w| = 0 \pmod 2$



iii)  $L =$  set of all strings over  $\{a, b\}$  that  $w \in \{a, b\}^*$   $|w| = 2 \pmod 3$



w)  $L =$  set of all strings over  $\{a, b\}$  that length of string is at most 3

