

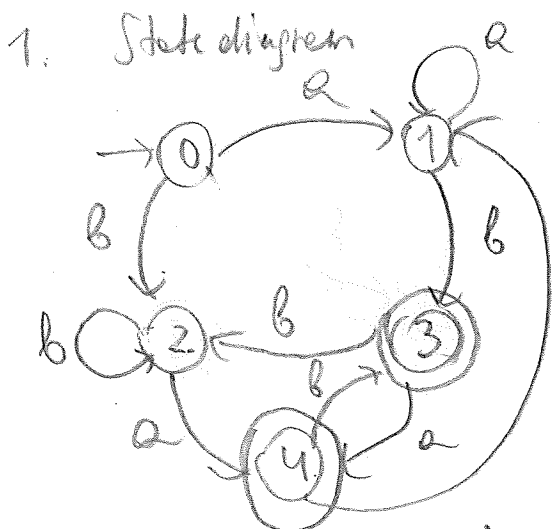
NAME (printed neatly) _____ QUIZ#8 GRADE _____

Directions for taking quizzes: the same as in the previous quizzes.

- An acceptor automaton M has the set of states $S = \{0, 1, 2, 3, 4\}$, where 0 is the initial state. The automaton has two acceptance states: 3 and 4. The alphabet is $A = \{a, b\}$ and the state transition function is given by the table below. Draw the state diagram for this automaton and determine the input words accepted by M .

	a	b
0	1	2
1	1	3
2	4	2
3	4	2
4	1	3

- Design a finite state machine (by drawing its state diagram), which will read a word in $\{a, b, c\}$ and output each occurrence of a and b but will replace every third occurrence of c by b .



To finish at state ③ the input word must end with ab ;
 to finish at state ④ your word must end with ba ,
 i.e the set of accepted word is a subset of words ending with ab or ba . Now let us show that any

word ending with ab or ba is accepted. Indeed, to finish at state ① the word must be equal to a or end with aa , to finish at state ② the word must be equal to b or to finish with bb . No word (except empty one) leads to 0. So any word which ends with ab or ba cannot lead to 0, 1 or 2 as final states \Rightarrow it leads to ③ or ④.

Conclusion The word is accepted \Rightarrow it ends with ab or ba

-you can continue your solution in the next page, if you do not have enough space

or ba

Solution of problem 2 is on the back

Problem 2

NAME _____

Circle First Letter of Last Name

A-F G-K L-O P-Z

