National University of Computer and Emerging Sciences, Lahore Campus

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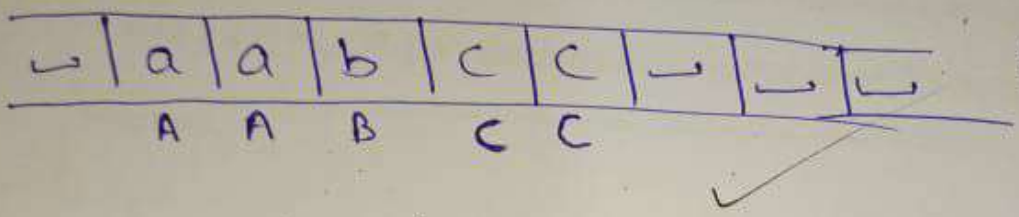
Course:	Theory Of Automata	Course Code:	CS-3005
Program:	BS (Computer Science)	Semester:	Spring 23
Duration:	20 Minutes	Total Marks:	10
Paper Date:		Weight	
Section:	F	Page(s):	
Exam:	Quiz 3	Roll No.	21i-0615

Ahmad Dawood

Instruction/Notes: Use back side of this ass for rough work. Write down final answers only in the given space provided.

Problem # 1: Design a turing machine for the following language

$L = \{a^i b^j c^k \mid i*j = k;\ i,\ j,\ k \geq 1\}$



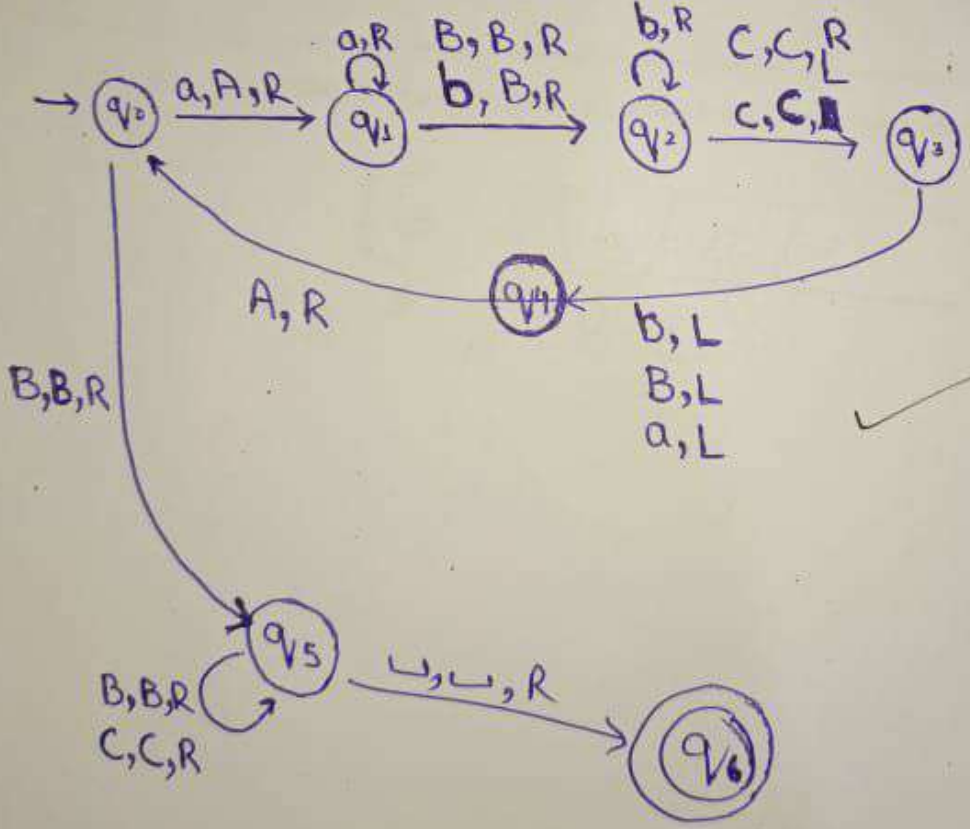
Strings :-

a b c

a a b c c

a a a b b c c c c c c

A A A B B C C C C C C



i x j = k

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Exam:	Quiz 3	Roll No.	21L-5179

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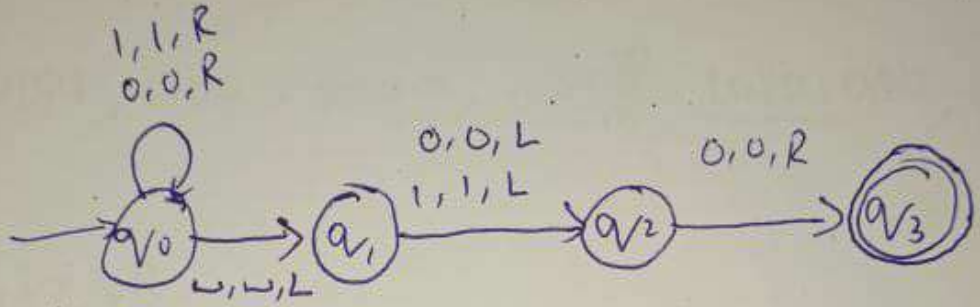
Problem # 1:

Construct a deterministic Turing machine that recognizes a binary string with zero at the second last position



␣ :- end symbol

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Paper Date:	22.11.23	Weight	
Section:	BCS-5E	Page(s):	
Exam:	Quiz 3	Roll No.	21L-7714

Instruction/Notes: Use back side of this ass for rough work. Write down final answers only in the given space provided.

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Problem # 1: Construct a Turing Machine for language L = {$0_{2n}1_n$ | n>=0}

$L = \{ 0^{2n} 1^n \mid n \geq 0 \}$

Strings:

ε

001

000011

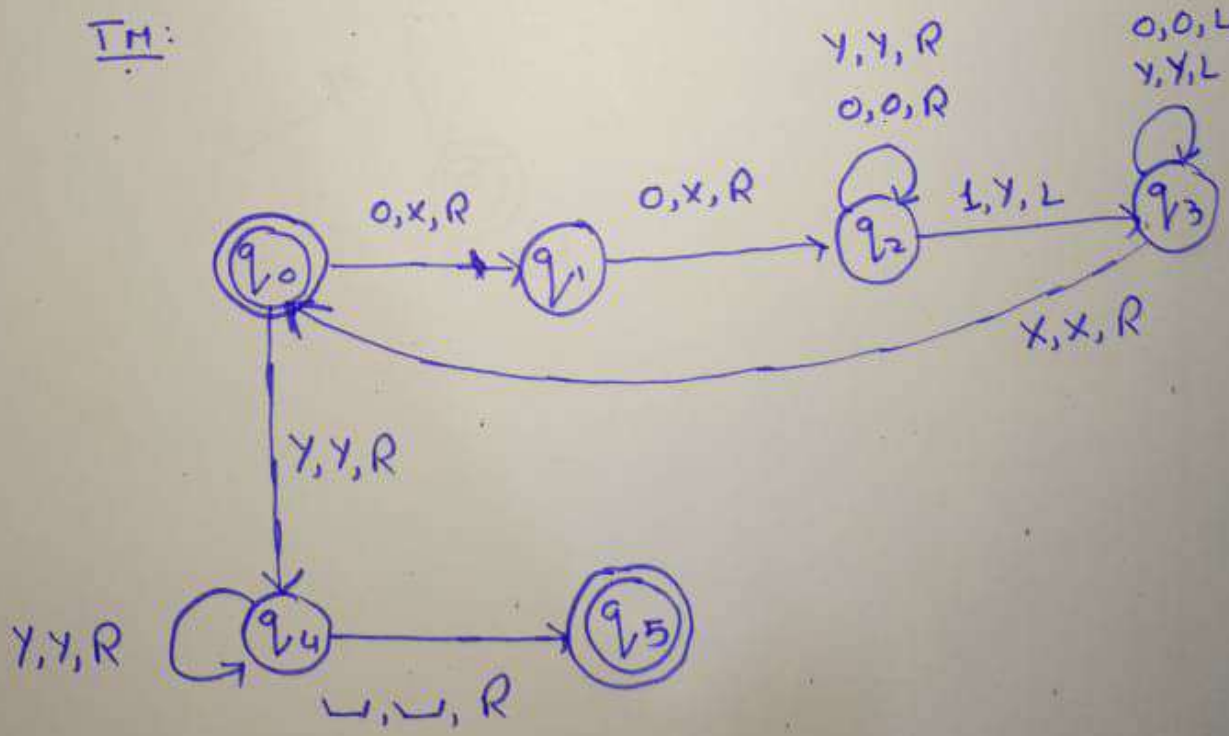
000000111

⋮

⇒ ␣ ␣ ~~0 0 0~~ ~~0 0 0~~ ~~1 1 1~~ ␣ ␣

X X X X X X Y Y Y

TM:



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Section:	5E	Page(s):	
Exam:	Quiz 3	Roll No.	21L-5164

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Instruction/Notes: Use back side of this ass for rough work. Write down final answers only in the given space provided.

Problem # 1: Design a deterministic one-tape Turing machine, with input alphabet {a, b, c}, that accepts the language L = { $a^i b^j c^k$ where i>=1, j >=1, and k = min{i, j} }