

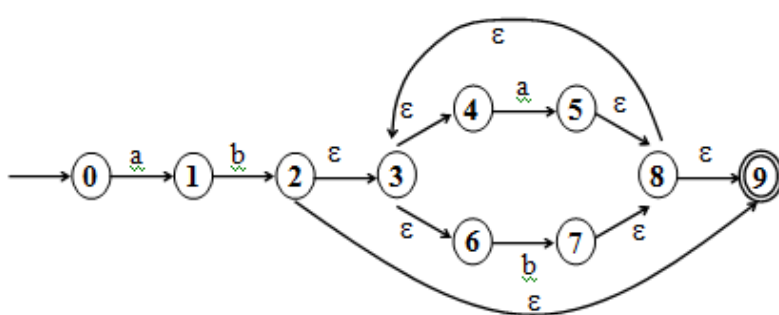
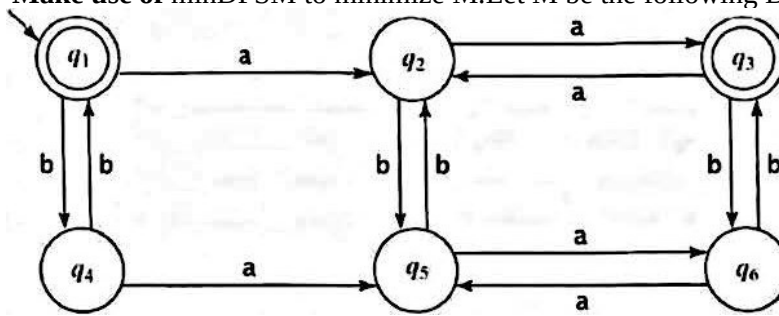
Academic Year	2020-2021		
Batch	2018-2022		
Year/Semester/	2020/V A & B		
Subject Code-Title	18CS54 - AUTOMATA THEORY & COMPUTABILITY		
Name of the Instructor	Mr. K Venkata Rao	Dept	CSE

Assignment No: 1

Total marks : 10

Date of Issue:01-10-2020

Date of Submission:06-10-2020

Sl. No	Assignment Questions	K Level	CO	Marks
1.	Define the following terms: a)Alphabet b) Power of an alphabet c) Language d) strings	Applying (K3)	CO 1	1
2.	Draw a DFA to accept strings of a's and b's having odd no. of a's and even no. of b's.	Applying (K3)	CO 1	1
3.	Obtain an NFA to accept strings of a's and b's ending with 'ab' or ba'. From this NFA Obtain an Equivalent DFA.	Applying (K3)	CO 1	1
4.	Obtain DFA for the following ϵ - NFA. 	Applying (K3)	CO 1	1
5.	Write differences between DFA, NFA and ϵ -NFA.	Applying (K3)	CO 1	1
6.	Make use of minDFSM to minimize M.Let M be the following DFSM. 	Applying (K3)	CO 1	1

	<p style="text-align: center;">(OR)</p> <p>Construct minimum state equivalent automata for the following DFA.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: right;">→A</td> <td style="border-left: 1px solid black; border-right: 1px solid black; text-align: center;">B</td> <td style="border-right: 1px solid black; text-align: center;">A</td> </tr> <tr> <td style="text-align: right;">B</td> <td style="border-left: 1px solid black; text-align: center;">A</td> <td style="border-right: 1px solid black; text-align: center;">C</td> </tr> <tr> <td style="text-align: right;">C</td> <td style="border-left: 1px solid black; text-align: center;">D</td> <td style="border-right: 1px solid black; text-align: center;">B</td> </tr> <tr> <td style="text-align: right;">*D</td> <td style="border-left: 1px solid black; text-align: center;">D</td> <td style="border-right: 1px solid black; text-align: center;">A</td> </tr> <tr> <td style="text-align: right;">E</td> <td style="border-left: 1px solid black; text-align: center;">D</td> <td style="border-right: 1px solid black; text-align: center;">F</td> </tr> <tr> <td style="text-align: right;">F</td> <td style="border-left: 1px solid black; text-align: center;">G</td> <td style="border-right: 1px solid black; text-align: center;">E</td> </tr> <tr> <td style="text-align: right;">G</td> <td style="border-left: 1px solid black; text-align: center;">F</td> <td style="border-right: 1px solid black; text-align: center;">G</td> </tr> <tr> <td style="text-align: right;">H</td> <td style="border-left: 1px solid black; text-align: center;">G</td> <td style="border-right: 1px solid black; text-align: center;">D</td> </tr> </table>		0	1	→A	B	A	B	A	C	C	D	B	*D	D	A	E	D	F	F	G	E	G	F	G	H	G	D			
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7.	<p>Obtain regular expressions for the following languages on $\Sigma = \{a, b, c\}$.</p> <p>a. all strings containing exactly one a</p> <p>b. all strings containing no more than three a's</p> <p>c. all strings that contain at least one occurrence of each symbol in Σ</p>	Applying (K3)	CO 2	1																											
8.	<p>Obtain a Regular expression for the language.</p> <p>i) $L = \{a^n b^m \mid n+m \text{ is even}\}$</p> <p>ii) $L = \{a^n b^m \mid m \geq 1, n \geq 1 \text{ and } nm \geq 3 \}$</p>	Applying (K3)	CO 2	1																											
9.	<p>Define a regular expression. Find regular expression for the following languages on $\{a, b\}$:</p> <p>i) $L = \{a^{2n} b^{2m} \mid n \geq 0 \text{ and } m \geq 0\}$</p> <p>ii) $L = \{w : w \bmod 3 = 0\}, w \in \{a, b\}^*$</p>	Applying (K3)	CO 2	1																											
10.	<p>Obtain a Regular expression for the following languages</p> <p>i) To accept strings of a's & b's such that every block of four consecutive symbols contains at least two a's.</p> <p>ii) To accept strings of a's & b's whose length is either even or multiples of 3 or both.</p>	Applying (K3)	CO 2	1																											

Signature of Course Incharge

Signature of HOD-CSE