National University of Computer and Emerging Sciences, Lahore Campus

	Course:	**Theory Of Automata**	**Course Code:**	**CS-3005**
	Program:	**BS (Computer Science)**	**Semester:**	**Spring 23**
	Duration:	**15 Minutes**	**Total Marks:**	**10+10**
	Paper Date:		**Weight**	
	Section:		**Page(s):**	
	Exam:	**Quiz 1**	**Roll No.**	

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

Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

$L = \{x \mid x \in \{0,1\}^*$; where x has an odd length and odd number of 1's $\}$

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

L = {x | x ∈ {a,b}*; where x does not contain the substring 'baba' }

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

L = {x | x ∈ {a,b}*; x contains even number of a's and each a is followed by at most one 'b'}

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

L = {x | x ∈ {a,b}*; x contains at most 2 b's and odd number of a's}

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

$L = \{x \mid x \in \{0,1\}^*;$ 2nd last digit in x must be '1'$\}$

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

L = {x | x ∈ {m, n}*; x contains ′mnmn′ as a substring but does not ends on ′mn′ and does not start with ‘mn’}

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

L = {x | x ∈ {0,1}*; |x| should be divisible by 2 and contains odd number of '0'}

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

L = {x | x ∈ {m, n}*; x does not contains ′mmnn′ as a substring and does ends on ′nn′}

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

L = {x | x ∈ {a, b}*; x contains both 'aba' and 'bab' as a substring}

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]

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Q1a: Write 10 valid words for the Language given below in canonical order (increasing order of length)? [CLO 1]

$L = \{x \mid x \in \{0,1\}^* \mid x \text{ contains even number of 0's but does not ends on '01'}\}$

Solution:

L = { }

Q1b: Construct a DFA for the given Language given in Q1a. You have to draw a state diagram? [CLO 2]