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Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Midterm Examination, Spring 2023

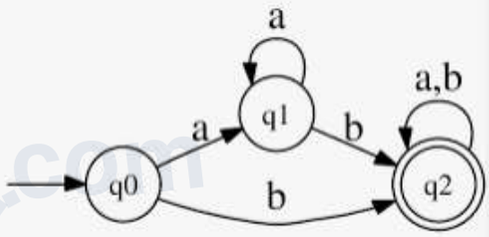
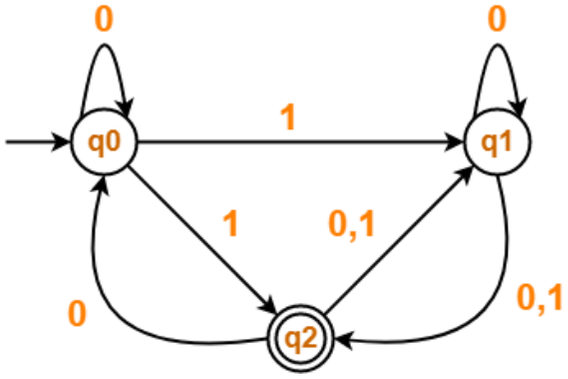
Course Code: SE234 ; Course Title: Theory of Computing

Sections & Teachers: A (35 Batch) , A (36 Batch) & FBR

Time: 1 Hour 30 Mins **Marks: 25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	***a)***	Identify the difference between ε and ϕ with finite automata diagram.	**[Marks-2]**	**CLO-1 *Level-3***
	b)	**Construct** Deterministic finite Automata for following language: .{w | every odd position of w is a 1 for binary alphabet} I.Let Σ = {a, b} and let L = {baa}. Design a DFA for L	**[Marks-2.5+2.5]**	
	c)	**Demonstrate** the following DFA and show epsilon acceptance. 	**[Marks-3]**	
2.	***a)***	**Differentiate** DFA and NFA by showing a proper example with diagram.	**[Marks-3]**	**CLO-2 *Level-5***
	b)	**Formulate** subset construction method to convert the following Non-Deterministic Finite Automata (NFA) to Deterministic Finite Automata (DFA)- 	**[Marks-4]**	
	c)	**Construct** a Non deterministic finite automata for input {a,b} where	**[Marks-3]**	

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		L = {w| w where any numbers of a's followed by any number of b's}		
3.	***a)***	Explain Regular Expression and compare a^* and a^+	**[Marks-3]**	**CLO-3** ***Level-3***
	b)	**Construct** Regular Expression for the following Language: L= {w| w does contain 3 consecutive b's where alphabet in {b,c}}	**[Marks-2]**	

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