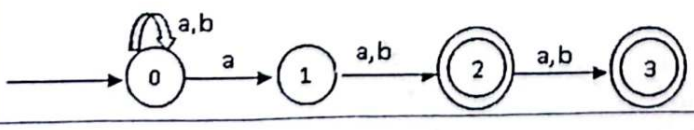
Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Mid Semester Examination, Fall 2024
Course Code: CSE228, Course Title: Theory of Computation
Level: L2 Term: T2 Batch: 64

Time: 01.5 Hrs **Marks:25**

Answer ALL Questions

[All portions of each question must be answered sequentially.]

Q1	a)	**Summarize** the difference between ø and ϵ . Given the Alphabet $\sum=\{y, z, 0\}$, so compute $\sum^2$	[2]	CO1
	b)	**Evaluate** the string 00110 using extended transition function for the following transition table. → q0 {q0} {q0,q1} q1 {q2} Ø *q2 Ø Ø	[2]	
	c)	**Summarize** the meaning of "a*b+b*a".	[1]	
Q2	a)	**Apply** the knowledge of NFA to Design NFA's accepting the following languages over the alphabet {a,b} **i)** The set of all Strings containing **aba** anywhere in the string **ii)** The set of all Strings ending with **bba** **iii)** ending with **bbb**	[3]	CO2
	b)	**Apply** the knowledge of DFA to Design DFA's accepting the following languages over the alphabet {0,1} **i)** The set of strings containing 010 at the end in the string **ii)** Design DFA to accept the following language, L={W/ W has odd number of 1's and even number of 0's}	[3]	
	c)	Considering the transition table from the Q1 b. If the mentioned Automata is NFA, then **convert** to DFA.	[4]	
Q3	a)	**Construct** the Regular Expression for the language consisting of all the strings of 0' and 1's that have the following condition: **i)** Containing 110 anywhere in the string **ii)** Containing 1 either two or three possible position from the beginning. **iii)** Containing 101 at the end of the string	[3]	CO2
	b)	**Convert** the following Regular expression (RE) into NFA with ϵ transition. **i)** 1(1+0)*0 **ii)** (a|b)*(abb|a*b)	[3]	
	c)	**Convert** the following NFA into equivalent RE 	[4]	