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 $\Sigma=\{y, z, 0\}$, so compute Σ^2	[2]	
	b)	Evaluate the string 00110 using extended transition function for the following transition table. $\quad$ | $\quad$ 0 $\quad$ | $\quad$ 1 → q0 | {q0} | {q0,q1} q1 | {q2} | Ø *q2 | Ø | Ø	[2]	CO1
	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]	
	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]	CO2
	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]	
	b)	Convert the following Regular expression (RE) into NFA with ϵ transition. i) 1(1+0)*0 $\quad$ ii) (a|b)*(abb|a*b)	[3]	CO2
	c)	Convert the following NFA into equivalent RE 	[4]	