School of Computing Science and Engineering
Bachelor of Technology in Computer Science and Engineering
Mid Term Examination - Nov 2023

Duration : 90 Minutes
Max Marks : 50

Sem V - E2UC501T - Theory of Computation

General Instructions
*Answer to the specific question asked*
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Differentiate between DFA and NFA.	K1 (1)
2)	Elaborate ε-NFA.	K2 (2)
3)	Construct Regular Expression for the language L ={ w | w Є{ a, b}* and w starts with 'a' and ends with 'b' }	K3 (3)
4)	Convert the following NFA to its equivalent DFA.	K3 (6)

	0	1
->q0	q0	q1
q1	q1,q2	q1
*q2	q2	q1,q2

5)	Design a DFA that accepts strings that are palindromes over the alphabet {0, 1} and Represent it in all 5 tuples.	K3 (9)
6)	Create a DFA that recognizes binary strings that have no consecutive 1s.	K4 (8)
7)	Convert the following Non-Deterministic Finite Automata (NFA) to Deterministic Finite Automata (DFA)	K5 (15)
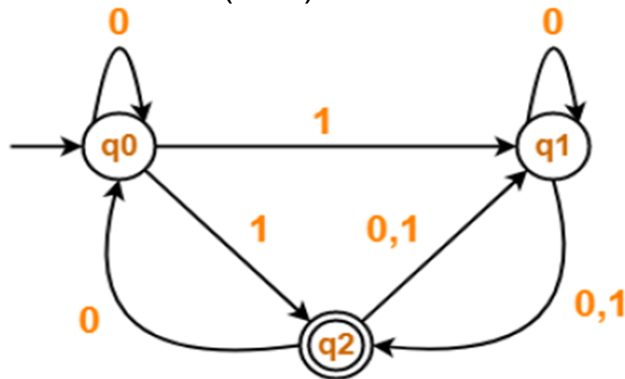
8)	Design a Mealy Machine which produces an output that is 1's complement of your input string and also draw a mealy transition table for this.	K6 (6)