GALGOTIAS UNIVERSITY

School of Computing Science and Engineering
Bachelor of Science in Computer Science
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

### Sem IV - E1UP401T - 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 L* and L+	K2 (2)
2)	Define NFA. What are the differences between DFA & NFA?	K1 (3)
3)	Design a DFA over Σ ={0, 1} which accepts all binary numbers divisible by 3	K2 (4)
4)	Design the DFA that accepts an even number of a's and even number of b's over Σ = {a, b}	K2 (6)
5)	Construct the DFA over Σ ={0, 1} which recognize all strings starts with 01	K3 (6)
6)	Convert the following ε-NFA equivalent to DFA as given follow:	K3 (9)
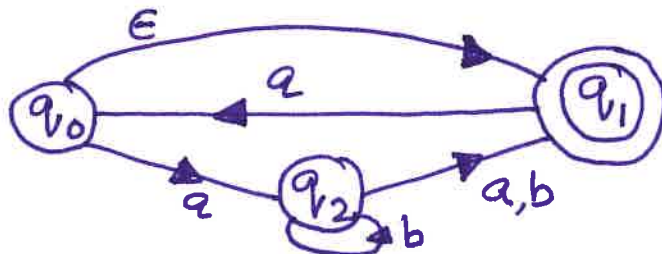
7)	Design a DFA which accepts all even binary numbers and minimise the DFA over alphabet Σ{0,1}	K4 (8)
8)	Construct the DFA for the following regular expressions: a) 01* b) (0+1)01 c) 00(0+1)*	K4 (12)

OR

	Which of the strings 00, 01001, 10010, 000, 0000 are accepted by the following NFA? Justify your answer(Note: λ is the null transition)	K4 (12)