R22

ANURAG Engineering College
(An Autonomous Institution)
II B.Tech II Semester Supplementary Examinations, December – 2024
AUTOMATA THEORY AND COMPILER DESIGN
(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Time: 3 Hours   **Max. Marks: 60**

Section – A (Short Answer type questions)   (10 Marks)
Answer All Questions

		Course Outcome	B.T Level	Marks
1.	Define the following with example. i). Alphabet ii). Power of an alphabet.	CO1	L1	1M
2.	write the differences between NFA with €-transitions and NFA without €-transitions	CO1	L1	1M
3.	Write a regular expression for a language contains the substring 110	CO2	L1	1M
4.	Define Ambiguity in Grammars and Languages	CO2	L1	1M
5.	Write the mathematical representation of PDA	CO3	L1	1M
6.	List a language accepted by PDA	CO3	L2	1M
7.	Write the Role of the Lexical Analyzer	CO4	L1	1M
8.	Why lexical and syntax analyzer are separated out?	CO4	L2	1M
9.	What is Code Generation?	CO5	L1	1M
10.	What is Syntax-Directed Definitions?	CO5	L1	1M

Section B (Essay Questions)
Answer all questions, each question carries equal marks.   **(5 X 10M = 50M)**

11.A)	Explain the procedure to convert NFA to DFA and Construct DFA equivalent to the given NFA	CO1	L2	10M

	0	1
→A	{A,B}	A
B	C	C
C	D	Φ
Ⓓ	D	D

OR

B)	Draw the transition diagram of a FA which accepts all strings of 0's and 1's in which the number of 0's are odd and 1's are even.	CO1	L3	10M

12 A)	What is an ambiguous grammar? Show that the following grammar is Ambiguous, where E is the start symbol. $$E \rightarrow E+E|E-E|E*E|E/E|(E)|a$$	CO2	L2	10M

OR

B)	Explain the step-by-step method to generate equivalent FA for the regular expressions of different forms.	CO2	L2	10M

13.A)	Define Recursively Enumerable Language? Describe the closure properties of recursively enumerable languages?	CO3	L2	10M

OR

B)	Outline the PDA with example. In what ways a PDA can show the acceptance of a string. Explain with example	CO3	L3	10M

14 A)	Discuss about the role of lexical analyzer. Explain with program.	CO4	L2	10M
	OR			
B)	What is an LR (0) item? Construct an SLR parsing table for the grammar G: S→ L=R |R, L → *R | id, R → L. Is it SLR (1) grammar?	CO4	L3	10M
15.A)	Give syntax directed translation scheme for simple desk circulator.	CO5	L2	10M
	OR			
B)	Write short notes on i) Three address code ii) syntax tree iii) Syntax-Directed Definitions (SDD)	CO5	L2	10M