

PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)
II B.Tech II Semester Regular/Supplementary Examinations, May-2024
AUTOMATA THEORY AND COMPILER DESIGN
(IT)

Time: 3 hours

Max. Marks: 70

Answer ONE Question from each Unit
All Questions Carry Equal Marks

Q. No.	Questions		BTL	CO	Marks		
UNIT – I							
1.	a)	Define DFA. Construct a DFA accepting the set of all strings ending with abb over the alphabet {a,b}	K3	CO1	7M		
	b)	Construct epsilon-NFA for the regular expression (0+1)*01	K3	CO1	7M		
OR							
2.	a)	Define NFA. Construct NFA accepting the set of all strings starting or ending with 01 over the alphabet {0,1}	K3	CO1	7M		
	b)	Convert the given NFA to DFA	K3	CO1	7M		
						0	1
		→p				{q,s}	{q}
		*q				{r}	{q,r}
		R				{s}	{p}
*s	ϕ	{p}					
UNIT – II							
3.	a)	Give the formal definition of CFG and its notational conventions.	K2	CO2	7M		
	b)	With the Construction of parse trees show that the given grammar is ambiguous for sentence id+id*id E → E+E E*E (E) id.	K3	CO2	7M		
OR							
4.	a)	Construct the Canonical LR and LALR set of items for the grammar S → SS+ SS* a.	K3	CO2	7M		
	b)	Illustrate with example Shift Reduce parsing.	K2	CO2	7M		
UNIT – III							
5.	a)	Explain the applications of Syntax Directed Translation.	K2	CO3	7M		
	b)	Explain type checking and type conversion with example.	K2	CO3	7M		
OR							
6.	a)	Explain dependency Graph with example.	K2	CO3	7M		
	b)	Explain overloading of functions and operators with example	K2	CO3	7M		
UNIT – IV							
7.	a)	Explain the storage organization in run-time environment.	K2	CO4	7M		
	b)	Explain the optimization of Basic Block.	K2	CO4	7M		

OR					
8.	a)	Explain Peephole Optimization.	K2	CO4	7M
	b)	Explain reducing fragmentation in heap management.	K2	CO4	7M
UNIT – V					
9.	a)	Discuss the issues in the design of a code generator.	K2	CO5	7M
	b)	Generate code for the given three address statement assuming all variables are stored in memory locations 1. $x=a+1$ 2. $x=b*c$ $y=a+x$	K3	CO5	7M
OR					
10.	a)	Illustrate with example the DAG representation of Basic Blocks.	K2	CO5	7M
	b)	Explain the register allocation and assignment.	K2	CO5	7M