R22

Code No: R22A1201

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular/Supplementary Examinations, April 2025

Automata and Compiler Design

(IT, CS&IT, CSE-AIML & B.Tech-AIML)

Roll No										

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

Note: This question paper contains two parts A and B
Part A is compulsory which carries 10 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

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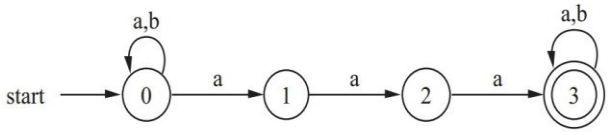
		PART-A (10 Marks) **(Write all answers of this part at one place)**	**BCLL**	**CO(s)**	**Marks**
1	A	Define a context free grammar?	**L1**	**CO-I**	**[1M]**
	B	What is a parse tree, and what is its purpose?	**L1**	**CO-I**	**[1M]**
	C	Differentiate top-down and bottom-up parsing?	**L1**	**CO-II**	**[1M]**
	D	What does 'k' represent in LL(k) grammar?	**L1**	**CO-II**	**[1M]**
	E	Differentiate SDD and SDT?	**L2**	**CO-III**	**[1M]**
	F	What is meant by the name equivalence?	**L1**	**CO-III**	**[1M]**
	G	What is the need for Code Optimization?	**L1**	**CO-IV**	**[1M]**
	H	Write about peephole optimizations?	**L1**	**CO-IV**	**[1M]**
	I	What are the limitations of stack allocation?	**L1**	**CO-V**	**[1M]**
	J	List out the issues in the design of a code generation?	**L2**	**CO-V**	**[1M]**
		PART-B (50 Marks) **SECTION-I**			
2	A	Construct DFA and NFA accepting the set of all strings not containing 101 as a sub string.	**L1**	**CO-I**	**[5M]**
	B	Write about regular expression? Write the regular expression for the language **L= { $a^n b^m$ | n>1,m>=1 }**	**L1**	**CO-I**	**[5M]**
		OR			
3	A	Convert the following NFA to DFA	**L2**	**CO-I**	**[5M]**



	B	Construct a equivalent Є-NFA for the regular expression: 10 + (0 + 11)0*1	**L2**	**CO-I**	**[5M]**
		SECTION-II			
4	A	Define complier? And explain the phases of complier.	**L2**	**CO-II**	**[5M]**

	B	Construct a CLR Parser for the Grammar: **S->CC** **C->cC|d**	**L3**	**CO-II**	**[5M]**
		OR			
5	A	Define Ambiguous Grammar? Check whether the grammar is ambiguous or not and remove ambiguity? **E-> E+E | E*E | (E) |id**	**L1**	**CO-II**	**[5M]**
	B	Explain the flow of attribute dependencies in L-attributed SDTs.	**L2**	**CO-II**	**[5M]**
		SECTION-III			
6	A	Interpret the method of generating intermediate code for flow control statements.	**L2**	**CO-III**	**[5M]**
	B	Describe the evaluation order of SDT with an example.	**L2**	**CO-III**	**[5M]**
		OR			
7	A	Explain in detail about type conversion and type checking with suitable examples.	**L2**	**CO-III**	**[5M]**
	B	Explain Chomsky hierarchy of languages and recognizers.	**L1**	**CO-III**	**[5M]**
		SECTION-IV			
8	A	What is an activation record? Explain how it is related to runtime storage organization.	**L1**	**CO-IV**	**[5M]**
	B	What is the need for code optimization? Explain principal sources of code optimizations?	**L1**	**CO-IV**	**[5M]**
		OR			
9	A	Explain the concept of non-local names and how they are accessed?	**L2**	**CO-IV**	**[5M]**
	B	Explain about the optimization of basic blocks and peephole optimization?	**L2**	**CO-IV**	**[5M]**
		SECTION-V			
10	A	Discuss the code generation phase with simple code generation algorithm?	**L2**	**CO-V**	**[5M]**
	B	What are the key components and processes involved in code generation?	**L1**	**CO-V**	**[5M]**
		OR			
11	A	Define DAG? Construct DAG for the expression: **a+a*(b-c)+(b-c)*d** .	**L2**	**CO-V**	**[5M]**
	B	Discuss on Register allocation and assignment in compilation?	**L1**	**CO-V**	**[5M]**