R20

Code No: R20A1202

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Regular/Supplementary Examinations, June 2024

Automata and Compiler Design (B.Tech-AIML)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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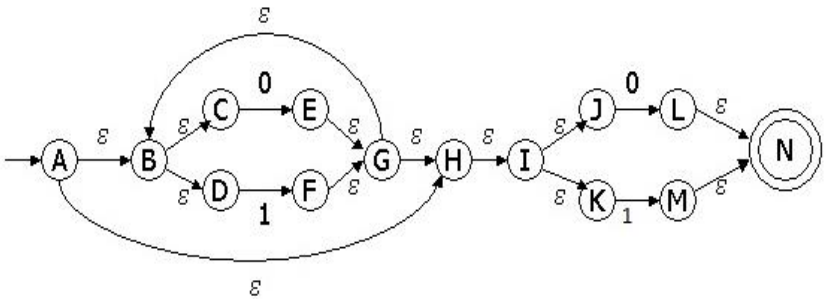
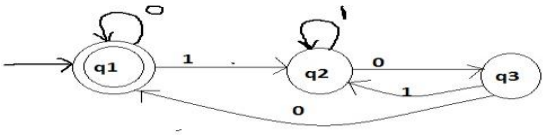
			BCLL	CO(s)	Marks
		SECTION-I			
1	***A***	Construct the Deterministic Finite Automaton for the following NFA with epsilon.	**L2**	**CO-I**	**[7M]**



	B	Find the Regular expression for the following Finite Automaton using Arden's theorem.	**L1**	**CO-I**	**[7M]**



OR

2	***A***	Design a FA for the Regular Expression **10+(0+11)0*1**	**L2**	**CO-I**	**[7M]**
	B	Construct an Equivalent Deterministic Finite Automaton (DFA) for the Non-deterministic Finite Automaton (NFA) **$M=(\{q_0,q_1\},\{0,1\},\delta,q_0,\{q_1\})$**, where the transition function (δ) is defined as $\delta(q_0,0)=\{q_0,q_1\}$ $\delta(q_0,1)=\{q_1\}$ $\delta(q_1,0)=\Phi$ $\delta(q_1,1)=\{q_0,q_1\}$.	**L2**	**CO-I**	**[7M]**
		SECTION-II			
3	***A***	Explain the parsing techniques with a hierarchical diagram.	**L1**	**CO-II**	**[7M]**
	B	Consider the following Grammar: A-> ABd|Aa|a B-> Be|b Remove the left recursion from this above Grammar.	**L5**	**CO-II**	**[7M]**

OR

4	***A***	Write a short note on: i. Ambiguity (with example) ii. Recursive Descent Parser iii. Predictive LL(1) parser (working) iv. Handle pruning	**L1**	**CO-II**	**[8M]**

	B	Consider the following Grammar: S-> AaAb|BbBa A-> € B-> € Check whether LL(1) and parse the input string **"ba"** or not.	**L3**	**CO-II**	**[6M]**
		SECTION-III			
5	***A***	Construct the syntax tree for the expression "**a*b-5+c"** using three routines.	**L4**	**CO-III**	**[7M]**
	B	List out the applications of Syntax Directed Translation	**L3**	**CO-III**	**[7M]**
		OR			
6	***A***	Differentiate between synthesized translation and inherited translation.	**L2**	**CO-III**	**[7M]**
	B	Draw the syntax tree and DAG for the following expression: **(a*b)+(c-d)*(a*b)+b**	**L4**	**CO-III**	**[7M]**
		SECTION-IV			
7	***A***	Analyze the impact of storage organization on memory usage and access times during program execution.	**L4**	**CO-IV**	**[7M]**
	B	Consider the following program code: Prod=0; I=1; Do{ Prod=prod+a[i]*b[i]; I=i+1; }while (i<=10); i. Partition into blocks ii. Construct the flow graph	**L3**	**CO-IV**	**[7M]**
		OR			
8	***A***	Elaborate Peephole optimization techniques with examples.	**L2**	**CO-IV**	**[7M]**
	B	List and describe the primary storage structures used in a compiler.	**L2**	**CO-IV**	**[7M]**
		SECTION-V			
9	***A***	List out the issues in the design of a code generator.	**L2**	**CO-V**	**[7M]**
	B	Elaborate Generic Code Generation algorithm	**L2**	**CO-V**	**[7M]**
		OR			
10	***A***	Draw the DAG for the statement **(p*q+r)-(p*q+r)**.	**L5**	**CO-V**	**[7M]**
	B	Generate the corresponding three-address code from the given arithmetic expression **"result = (a + b) * c – d".**	**L6**	**CO-V**	**[7M]**

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