



MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

II B.Tech II Sem Regular End Examination, July 2022 Automata Theory and Language Processors (CSC)

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

Note: 1. Question paper consists: Part-A and Part-B.

2. In Part – A, answer all questions which carries 20 marks.

3. In Part – B, answer any one question from each unit.

Each question carries 10 marks and may have a, b as sub questions.

PART- A**(10*2 Marks = 20 Marks)**

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|-------|---|----|-----|-----|
| 1. a) | List out the rules for forming regular expression. | 2M | C01 | BL1 |
| b) | Define parse tree with example. | 2M | C01 | BL1 |
| c) | Define Bootstrapping? | 2M | C02 | BL1 |
| d) | Write short notes on YACC specification. | 2M | C02 | BL1 |
| e) | What does a semantic analysis do? | 2M | C03 | BL1 |
| f) | List out the implementations of three address codes. | 2M | C03 | BL1 |
| g) | What are Induction variables? What is the result of eliminating them? | 2M | C04 | BL1 |
| h) | Define Flow graph. | 2M | C04 | BL1 |
| i) | What are the various register allocation strategies? | 2M | C05 | BL1 |
| j) | List the object code forms. | 2M | C05 | BL1 |

PART- B**(10*5 Marks = 50 Marks)**

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|------|---|----|-----|-----|
| 2 a) | Construct a DFA that accepts the language represented by $0^*1^*2^*$. | 5M | C01 | BL3 |
| b) | When do you say a language L is unambiguous? Show that the language $L = \{a^n b^n \mid n \geq 1\}$ is unambiguous. | 5M | C01 | BL3 |

OR

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|---|---|-----|-----|-----|
| 3 | Design a DFA which accepts all strings which are ending with 101 over an Alphabet {0, 1}. | 10M | C01 | BL6 |
|---|---|-----|-----|-----|

- 4 a) Define and Compute FIRST and FOLLOW for the grammar. 5M C02 BL5
 $S \rightarrow id = E \mid E$
 $E \rightarrow E + T \mid E - T \mid T$
 $T \rightarrow T * F \mid F$
 $F \rightarrow (S) \mid id \mid int_const$
- b) Distinguish between SLR, CLR, and LALR. CLR is more powerful than other, justify with your answer? 5M C02 BL4
- OR**
- 5 Discuss in detail about the operations of compiler indicating the inputs and outputs of each phase in translating the statement "a = (b*c) + (b*c) +20". 10M C02 BL2
- 6 a) What is type system? Discuss static and dynamic checking of types. 5M C03 BL2
 b) Describe in detail about Chomsky hierarchy with suitable example? 5M C03 BL2
- OR**
- 7 Describe in detail the Syntax Directed Translation of while statement. 10M C03 BL2
- 8 a) Generate the Three Address Code for the given expression. 5M C04 BL5
 $d = (a - b) + (a - c) + (a - c)$
 b) Define Basic Block? Discuss in detail about optimization of basic blocks. 5M C04 BL2
- OR**
- 9 What is the purpose of code optimization? Explain in detail loop optimization with suitable example. 10M C04 BL4
- 10 a) Discuss the issues in code generation with examples. 5M C05 BL2
 b) What are the applications of DAG? Explain with example. 5M C05 BL4
- OR**
- 11 Explain in detail about machine dependent code generation techniques. 10M C05 BL4