



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

III B.Tech II Sem Regular End Examination, June 2022

Principles of Compiler Construction (Information Technology)

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) | Write the regular definition and transition diagram for identifiers. | 2M | CO1 | BL1 |
| b) | What is the difference between pass and phase? | 2M | CO1 | BL1 |
| c) | What is top-down parsing? | 2M | CO2 | BL1 |
| d) | Define parsing. | 2M | CO2 | BL1 |
| e) | What is an intermediate code? | 2M | CO3 | BL1 |
| f) | What does L-attributed stand for in grammar? | 2M | CO3 | BL1 |
| g) | Define symbol table. | 2M | CO4 | BL1 |
| h) | Define flow graph. | 2M | CO4 | BL1 |
| i) | What is folding? | 2M | CO5 | BL1 |
| j) | What is machine-independent optimization? | 2M | CO5 | BL1 |

PART- B

(10*5 Marks = 50 Marks)

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|------|---|----|-----|-----|
| 2 a) | Discuss in detail about the role of lexical analyzer in a compiler. | 5M | CO1 | BL2 |
| b) | Convert the regular expression $R=(11+0)^*(00+1)^*$ to finite automata. | 5M | CO1 | BL6 |

OR

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|------|---|-----|-----|-----|
| 3 | Show the output at all phases of the compiler for the following fragment of 'C' code:
float a, b;
a=a*70+b+2; | 10M | CO1 | BL3 |
| 4 a) | Give the classification of parsing techniques and briefly explain each. | 5M | CO2 | BL4 |
| b) | Design a CFG for the language L over {0,1} to generate all the strings having alternate sequence of 0 and 1. | 5M | CO2 | BL6 |

OR

- 5 Generate the SLR parsing table for the following grammar
 $S \rightarrow OS0 \mid 1S1 \mid 10$ 10M C02 BL6
- 6 a) What is syntax directed translation? How it is different from translation schemes? Explain with an example. 5M C03 BL2
b) Explain how to generate three address codes with syntax directed definitions with an example. 5M C03 BL2
- OR**
- 7 Explain different types of intermediate codes forms and represent the following statement in different forms:
 $-(A + B) - (C + D) + (A + B + C)$ 10M C03 BL2
- 8 a) What are the Issues in the design of a code generator? Explain. 5M C04 BL2
b) Explain in brief about register allocation and assignment. 5M C04 BL2
- OR**
- 9 Describe the rules to construct DAG and also construct the DAG for the following basic block.
 $D = B * C$
 $E = A + B$
 $B = B * C$
 $A = E - D$ 10M C04 BL2
- 10 a) Explain about common sub expression and dead code elimination with an example. 5M C05 BL2
b) Explain in brief about induction variables and reduction in strength. 5M C05 BL2
- OR**
- 11 Explain in detail about Loop Optimization. 10M C05 BL2

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