



## III B.Tech II Sem Supply End Examination, January 2023

**Compiler Design**

(Computer Science and Engineering)

**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) | Define Token, Pattern and Lexeme.                            | 2M | C01 | BL1 |
| b)    | Define Loader.   | 2M | C01 | BL1 |
| c)    | What is Context free grammar?                                | 2M | C02 | BL1 |
| d)    | Write about three-address code.                              | 2M | C02 | BL1 |
| e)    | What are the advantages of Heap storage allocation strategy? | 2M | C03 | BL1 |
| f)    | What are the uses of a symbol table?                         | 2M | C03 | BL1 |
| g)    | List out the issues in the design of code optimization.      | 2M | C04 | BL1 |
| h)    | How to identify the leader in a basic block?                 | 2M | C04 | BL1 |
| i)    | Define loop optimization.                                    | 2M | C05 | BL1 |
| j)    | What is object code or target code form?                     | 2M | C05 | BL1 |

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

- |      |  |    |     |     |
|------|--|----|-----|-----|
| 2 a) | Define Compiler. What are the data structures in compiler? | 5M | C01 | BL1 |
| b)   | Describe in brief about Phases of a Compiler.              | 5M | C01 | BL2 |

**OR**

- |      |   |     |     |     |
|------|---|-----|-----|-----|
| 3    | Explain in brief about LEX Compiler.  | 10M | C01 | BL4 |
| 4 a) | Construct SLR Parsing table for the grammar $E \rightarrow E+T/T$ , $T \rightarrow T * F / F, F \rightarrow (E) / id$ | 5M  | C02 | BL6 |
| b)   | Define Bottom up parsing. What are the different types of bottom up parser?   | 5M  | C02 | BL1 |

**OR**

- |   |  |     |     |     |
|---|--|-----|-----|-----|
| 5 | Construct FIRST and FOLLOW for the Grammar $E \rightarrow E+T/T$ , $T \rightarrow T * F / F, F \rightarrow (E) / id$ ? | 10M | C02 | BL6 |
|---|--|-----|-----|-----|

- 6 a) Construct a Quadruple, Triple and Indirect Triple for the statement  $a=b+c*d$ ? 5M C03 BL6  
b) Define Intermediate code generator. Explain in brief about different forms of Intermediate code generation 5M C03 BL4

**OR**

- 7 Define Semantic analysis. Explain in brief about Type expressions. 10M C03 BL4
- 8 a) Define Basic block. Explain in brief about optimization of basic blocks. 5M C04 BL4  
b) List out and explain about the peephole optimization techniques. 5M C04 BL4

**OR**

- 9 Explain in brief about function preserving transformations on basic blocks. 10M C04 BL4
- 10 a) Discuss in brief about DAG for register allocation. 5M C05 BL2  
b) Define code generator. What are the issues in the design of a code generator. 5M C05 BL1

**OR**

- 11 Explain in brief about constant propagation and partial redundancy elimination. 10M C05 BL4

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