

III B. Tech I Semester Supplementary Examinations, June/July-2022
COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

1. a) With neat diagram explain different phases of compiler. Mention the input and output of each phase [8M]
- b) Derive the regular expression for the tokens given below and also draw a transition diagram to recognize the following tokens: [7M]
- i) Relational operators
 - ii) Integer constant
 - iii) Identifier
 - iv) White spaces
 - v) Exponent part of a number

(OR)

2. a) Explain in detail about LEX tool. [8M]
- b) Write the steps to convert Non-Deterministic Finite Automata (NFA) into Deterministic Finite Automata (DFA). [7M]

UNIT-II

3. a) Write the properties of LR parser with its structure. Also explain the techniques of LR parser. [8M]
- b) What is Left Recursion? How to eliminate Left Recursion. [7M]

(OR)

4. a) Construct predictive parser for the following grammar: [8M]
 $S \rightarrow (L)/a$
 $L \rightarrow L,S/S$ and parse any input string.
- b) Describe the Error recovery scheme in YACC. [7M]

UNIT-III

5. a) What is symbol table? Explain how the hash table is used to construct a symbol table. [8M]
- b) What are the reasons to use intermediate code in a compiler? Write the intermediate code for the expression $a + a * (b + c) * d$. [7M]

(OR)

6. a) What are the contents of a symbol table? Explain in detail about the symbol table organization for block structured languages. [8M]
- b) Write down the translation procedure for control statement? [7M]

UNIT-IV

7. a) Compare static versus dynamic memory allocation. [8M]
b) Describe in detail about stack allocation of space and heap management. [7M]

(OR)

8. a) Explain Storage allocation strategies with suitable examples? [8M]
b) Illustrate the mechanism of elimination of partial redundancy in data flow analysis. [7M]

UNIT-V

9. a) What are the properties of code generation phase? Also explain the Design Issues of this phase. [8M]
b) Explain the target machine architecture? [7M]

(OR)

10. a) What are basic blocks? Write the algorithm for partitioning into Blocks. [8M]
b) Explain the simple code generator and generate target code sequence for the following statement $d := (a-b) + (a-c) + (a-c)$. [7M]
