



R20 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code:3P5ED

B.Tech V Semester Regular Examinations, January 2023

* COMPILER DESIGN (Computer Science & Engineering)

Maximum Marks: 70

Date:23.01.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 What is the difference between a pass and a phase?
- 2 What is synthesis?
- 3 Define handle.
- 4 What is context free grammars?
- 5 Define S- attributed and L-attributed grammars
- 6 How to check structural equivalence of two type expressions?
- 7 Mention the properties that a code generator should possess.
- 8 Define basic block in a flow graph.
- 9 Generate a object code for following statements $a = b + c; d = a + e$
- 10 What are live variables?

Part-B

Answer All the following questions.

(10MX 5=50Marks)

- 11 A. Explain various error recovery strategies in lexical analysis. [4M]
B. Construct a Finite Automaton for the Regular Expression $(00+11)^*$? [6M]

OR

- 12 Explain the various phases of a compiler in detail. Also write down the output for the following expression after each phase $a: = b * c + d$. [10]
- 13 Construct the LR Parsing table for the following grammar: [10M]

$E \rightarrow E + T \mid T$

$T \rightarrow T * F \mid F$ *

$F \rightarrow (E) \mid id$

OR

- 14 Construct an LALR Parsing table for the following grammar: [10M]

$E \rightarrow E + T \mid T, T \rightarrow T * F \mid F, F \rightarrow id$

- 15 A. Write a syntax directed translation scheme for generating a decimal value given a binary number as input. For example on input 101.101, the value should be 5.625. [5M]
B. Generate the three address code for the statement $X := A[I] + B[I]$. [5M]

OR

- 16 Give syntax directed translation scheme for simple desk calculator. [10M]
17 Write the code generation for the $d := (a-b) + (a-c) + (a-c)$. [10]

OR

- 18 Give an example to show how DAG is used for register allocation. [10M]
19 A. Explain about the Principal sources of Optimization. [5M]
B. Describe Loops in Flow Graphs. [5M]

OR

- 20 Discuss various techniques of function preserving transformations for code optimization. [10M]