R20 Regulation *Subject code: 3P5HD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, June/July 2023

COMPILER DESIGN

(CSE (DS))

Maximum Marks: 70 Date:06.07.2023 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 Define Token.
2 What is a complier?
3 Write a regular expression for an Identifier and Number.
4 What are the various conflicts that occur during shift reduce parsing?
5 Mention the rules for type Checking.
6 Define a syntax-directed translation.
7 What is a basic block?
8 What are the properties of optimizing compiler?
9 What is Flow graph?
10 When does a Dangling reference occur?

Part-B

Answer All the following questions. (10MX 5=50Marks)

11 A. Explain briefly about Regular Expression to DFA.
B. What are the issues in Lexical Analysis? [5+5]

OR

12 A. Explain about Design of Lexical Analyzer with a simple Language.
B. Briefly explain the recognition of tokens. [5+5]

13 A. Compare SLR LALR & LR parses.
B. Construct the SLR parsing table for the grammer
E -> E+T/T
T -> TF/F
F -> F*a/b [5+5]

OR

14 A. Construct a Canonical parsing table for the grammer given below
E -> E+T
E-> E
T -> T*F
T -> F
F -> (E)
F -> ID

B. Explain LR parsing algorithm with Example. [5+5]

15 A. Write notes on Syntax directed definitions and constructions of syntax Tree.
B. Explain the specification of Simple type Checker. [5+5]

OR

16 A. Describe the role of Checker Equivalence of type expression and type conversion in detail.
B. Write Syntax directed Translation for Arrays. [5+5]

17 A. Explain various issues in the design of code generator.
B. Write about global flow analysis. [5+5]

OR

18 A. Discuss briefly about Peephole Optimization.
B. Explain about Heap Management. [5+5]

19 A. How do you reduce a flow graph to get optimized code?
B. Explain the Principle source of optimization. [5+5]

OR

20 A. How to trace data-flow global data flow analysis of Structures Program?
B. Write an algorithm for constructing natural loop of a back edge. [5+5]