R18 Regulation *Subject code:* 2P6FC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Regular/Supplementary Examinations, JUNE 2022

COMPILER DESIGN

(Information Technology)

Maximum Marks: 70 Date:20.06.2022 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 Cross Compiler.
2 Why lexical and syntax analyzers are separated?
3 Give the specification of the YACC parser generator.
4 What is significance of look ahead operator in LR parsing?
5 What are the benefits of intermediate code generation?
6 Define and write the differences between synthesized attributes and inherited attributes.
7 What are the advantages of stack storage allocation strategy?
8 Define Basic block. What are the rules for defining a basic block?
9 What is common sub expression elimination?
10 How do you calculate the cost of an instruction?

Part-B

Answer All the following questions. (5X10M=50Marks)

11 What are the various phases of the compiler? Explain each phase in detail. [10]

OR

12 A. Define Regular Expression? Explain about the Properties of Regular Expressions. [5]
B. Construct a Finite Automata and Scanning algorithm for recognizing identifiers, numerical constants in C language. [5]

13 Construct the predictive parser for the following grammar: [10]
S->(L)/a
L->L,S/S

OR

14 Construct an LALR Parsing table for the following grammar [10]
E-> E+T |T
T-> T*F|F
F->id

15 A. Write an SDT to convert infix to postfix expression. [5]
B. Explain in detail how an L-attributed grammar can be converted into translation scheme. [5]

OR

16 Generate intermediate code for the following code segment along with the required syntax directed translation scheme
if(a>b)
x=a+b
else
x=a-b
Where a and x are of real and b of int type data. [10]

17 Explain different issues in the design of a code generator. [10]

OR

18 A. Explain in brief about function preserving transformations on basic blocks. [5]
B. Explain in brief about optimization of basic blocks. [5]

19 Explain the following with an example: [10]
a) Redundant sub expression elimination
b) Frequency reduction
c) Copy propagation.

OR

20 A) Explain reducible and non-reducible flow graphs with an example. [5]
B) Explain natural loops and inner loops of flow graph with an example. [5]