R20 Regulation 3PSED

Subject code: ~~1ESED~~

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

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

COMPILER DESIGN

(Computer Science & Engineering)

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 two parts of compilation.
2 Write a regular expression for an identifier and a number.
3 Differentiate between Top Down Parser and Bottom Up Parser?
4 Define ambiguous grammar with an example.
5 Draw syntax tree for the expression a=b*– c + b*– c.
6 Mention the two rules for type checking.
7 What is Tracebased collection?
8 Define peephole optimization.
9 What do you mean by copy propagation?
10 List out the types of loop optimization.

Part-B

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

11 Explain in detail about the structure of a compiler. For the following expression Position: =initial+ rate*60. Write down the output for each phase. (10)

OR

12 Explain in detail about the role of lexical analyzer. (10)

13 Construct an SLR parsing table for the below grammar. (10)

E -> E + T
E -> T
T -> T * F
T -> F
F -> (E)
F-> id

OR

14 Consider the grammar given below. (10)

E -> E + T
E -> T
T -> T * F
T -> F
F -> (E)
F-> id

Construct an LR parsing table for the above grammar. Give the moves of LR parser on id*id+id

15 A. Analyze the grammar and syntax-directed translation for desk calculator and show the annotated parse tree for the expression (3 + 4) * (5 + 6). (5)
B. Explain in detail about the specification of a simple type checker. (5)

OR

16 What is a syntax Tree? Describe the construction of syntax tree for expressions. Write syntax directed definition for constructing syntax tree a-4+c. (10)

17 Compare and contrast of static, stack and Heap allocation. (10)

OR

18 What are the issues in design of a code generator? Explain in detail. (10)

19 Explain the principle sources of code optimization in detail. (10)

OR

20 A. Write about Data Flow Analysis of structural programs. (5)
B. Explain in detail optimization of basic blocks with example. (5)