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Name.....

Reg. No.....

**THIRD SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, NOVEMBER 2023**

(CBCSS)

Computer Science

CSS 3C 13—PRINCIPLES OF COMPILERS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Section A (Short Answer)*Answer any four questions.**Each question carries 2 weightage.*

1. Explain input buffering in Lexical analysis.
2. Write a regular expression for all strings on $\{0, 1\}$, start with 0 and ends in 101.
3. Define context free Grammar.
4. What is type expressions ?
5. Draw DAG for the following : $T1 = a - b$; $T2 = T1 + c$; $T3 = T1 * T2$.
6. What is locality of reference ?
7. What do you mean by stack allocation ?

(4 × 2 = 8 weightage)

Section B (Short Essay)*Answer any four questions.**Each question carries 3 weightage.*

8. What is a token? Explain specification of tokens.
9. Draw a DFA which accepts all strings over $\{0, 1, 2\}$, starts with a 0, followed by any number of 1's and end in "210" or "120".
10. Explain derivation, parse tree and ambiguity.

Turn over

11. Explain handle pruning with examples.
12. Explain type inference.
13. Outline the memory hierarchy.
14. Summarize the issues in the design of a code generator.

(4 × 3 = 12 weightage)

Section C (Essay)

Answer any two questions.

Each question carries 5 weightage.

15. Discuss the basic concepts in Shift Reduce parsing. Demonstrate SLR parsing with an example.
16. Discuss the implementation of three address codes, highlighting the merit and limitations of each. Discuss intermediate code generation for operator overloading.
17. Explain activation trees and records with examples. Demonstrate the role of activation trees and records in function calls and nested function calls. Discuss how nonlocal data on the stack is accessed.
18. Give a detailed account of data flow analysis in code optimization.

(2 × 5 = 10 weightage)