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Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2018

(CUCSS—PG)

Computer Science

CSS 3C 02—PRINCIPLES OF COMPILERS

(2014 Syllabus Year)

Time : Three Hours

Maximum : 36 Weightage

Part A

Answer **all** *questions.*

Each question carries 1 *weightage.*

1. What is meant by Bootstrapping ?
2. Write a note on YACC package.
3. Define the terms syntax and semantics.
4. Write a note on handle pruning.
5. Define CFG with example.
6. Comment on the importance of type checking.
7. Compare interpreter and compiler.
8. What is the role of intermediate code generation in overall compiler design ?
9. What is meant by peephole optimization ?
10. Draw the syntax tree for the following :

    if a > b + c then a = c else a = b + c – d*e
11. Write a note on shift-reduce parsers.
12. What is meant by ambiguous grammar ? Give example.

(12 × 1 = 12 weightage)

Part B

Answer any **six** *questions.*

Each question carries 2 *weightage.*

13. Distinguish between NFA and DFA. Compare their power as token recognizer.
14. Explain the error recovery strategies.

Turn over

15. Construct the operator precedence parser for the following grammar.

    S —> (L) | a

    L —> L, S | S

    Show the parsing of the string "(a,((a,a),(a,a)))" using the parser constructed.

16. Discuss the importance of Type Equivalence checking.

17. Explain the commonly used techniques in symbol table.

18. What is an activation record ? Explain clearly the components of an activation record.

19. Explain the various intermediate representation techniques.

20. Explain the various factors influencing optimization.

21. Compare control flow analysis and data flow analysis.

(6 × 2 = 12 weightage)

Part C

Answer any **three** *questions.*
Each question carries 4 *weightage.*

22. Explain the phases of a compiler with block diagram. Discuss the challenges of compiler design.

23. Construct the SLR parsing table for the following grammar :

    S —> R + S/R

    R —> T*R/T

    T —> id

24. Explain the different methods to perform LR parsing with examples.

25. What is the role of a memory manager ? Discuss various static and dynamic memory allocation and management.

26. Explain various code optimization techniques.

27. (a) What are the factors considered in code generation ?

    (b) Explain the algorithm for code generation for trees.

(3 × 4 = 12 weightage)