19P338 (Pages: 2) Name……..……...

Reg. No…….……

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2020

(CUCSS-PG)

CC19P CSS3 C13 - PRINCIPLES OF COMPILERS

(Computer Science)

(2019 Admission Regular)

Time: Three Hours Maximum: 30 Weightage

PART A

Answer any ***four*** questions. Each question carries 2 weightage.

1. What are the basic data flow properties? Explain in detail.
2. What is type casting? Explain different types of type casting with example. What changes should be made in semantic analyzer to add type casting?
3. Write a note on basic blocks and flow graphs.
4. What is DAG? Explain its use in code generation? Also generate a DAG for the expression a + a * (b - c).
5. What do you mean by ambiguous grammar? Check whether the following grammars are ambiguous or not?

   a) S→ 0S0 / 1s1 / 0 / 1 / ε

   b) S→ aS / aSb / X

   X→ Xa / a
6. Write about compiler construction tools.
7. Explain the issues with nested procedures.

(4 x 2 = 8 Weightage)

PART B

Answer any ***four*** questions. Each question carries 3 weightage.

8. Explain operator precedence parsing.
9. Discuss storage organization and allocation strategies.
10. Write a note on resolving flow control statements.
11. Describe:

    a) The complete algorithm that takes a NFA and converts it into an equivalent DFA.

    b) The design of a lexical analyzer generator.
12. Discuss about the actions generated by a simple code generator while generating code for a typical three address statement of the form x: =y op z.

13. Remove the left recursion from the following grammar and build the predictive parsing table.

    E → E + T / T

    T → T * F / F

    F → (E) / id

14. Explain the implementation of three address statement.

(4 x 3 = 12 Weightage)

PART C

Answer any ***two*** questions. Each question carries 5 weightage.

15. Discuss the principal sources of code optimization. Give proper examples wherever necessary.
16. Explain the phases of compiler. List the various errors detected in each phase of compiler.
17. Generate LR (0) parsing table for the given grammar and parse the string aabb.

    S → AA

    A → aA / b

18. What is three address code? Describe the various methods of implementing three address statements.

(2 x 5 = 10 Weightage)

****