BTS–VI–04.19–0605 Reg. No. □□□□□□□□

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SCHOOL OF ENGINEERING, KOCHI-682 022
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
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B.Tech. Degree VI Semester Examination April 2019

CS/IT 15-1602 COMPILER CONSTRUCTION

(*2015 Scheme*)

Time: 3 Hours Maximum Marks: 60

PART A

(Answer *ALL* questions)

$(10 \times 2 = 20)$

I. (a) Differentiate tokens, patterns and lexemes.

(b) Give the reasons for separating the analysis phase of compiling into lexical analysis and parsing.

(c) Differentiate top down parsing and bottom up parsing.

(d) Define handle. Explain the process of handle pruning.

(e) Describe operator grammar with example.

(f) Differentiate between synthesized and inherited attributes.

(g) What is a DAG? Draw a DAG for the expression

$a + a * (b - c) + (b - c) * d$.

(h) Write a note on activation records.

(i) Define basic block. Give an example.

(j) Discuss the different criteria for code improving transformation.

PART B

$(4 \times 10 = 40)$

II. Describe the different phases of the compiler with the help of the program statement 'position = initial + rate * 60'. Show the changes in the statement in each phase. (10)

OR

III. Write note on LEX language. Explain the design of lexical analyzer generator. (10)

IV. Compute the FIRST and FOLLOW of the grammar and construct the predictive parsing table. (10)

$E \rightarrow TE'$

$E' \rightarrow TE' / \in$

$T \rightarrow FT'$

$T' \rightarrow *FT' / \in$

$F \rightarrow (E) / id$

OR

V. (a) What is meant by left recursion? Describe the algorithm for eliminating left recursion with the help of an example. (5)

(b) Define ambiguous grammar. How can you eliminate ambiguity in the grammar? (5)

(P.T.O.)

VI. Explain different storage allocation strategies. (10)

OR

VII. Define type checking. Explain the type checking for: (10)

(i) Expressions (ii) Statements (iii) Functions

VIII. Define three address codes. Explain the different types of three address statements and methods to implement them. (10)

OR

IX. Explain various code optimization techniques. (10)

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