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ER-1513

M. Sc. (Third Semester) Examination, Nov.-Dec. 2019

COMPUTER SCIENCE

Paper : Third

(Theory of Compiler Design)

Time Allowed : Three hours

Maximum Marks : 40

Note : *Attempt questions of all two sections as directed.*

Section-A

(Short Answer Type Questions) **5×3=15**

Note : *Attempt all questions. Each question carries 3 marks. (Word limit 100 words)*

1. Explain the role of Lexical Analyzer.

Or

Explain the phases of compiler.

2. Differentiate between NFA and DFA.

Or

Write a note on Regular Expressions.

3. Explain the role of Parser in detail.

Or

Explain derivation and Parse tree.

4. What do you mean by Operator Precedence grammar?

Or

Explain storage allocation in block structured language in compiler design.

5. Explain shift reduce parsing with the help of an example.

Or

Write a note on 'Run Time Storage administrations.'

Section-B

(Long Answer Type Questions) **5×5=25**

Note : Attempt all questions in detail. Each question carries 5 marks. (Word limit 800 words)

6. How finite automata is used in Lexical Analysis? What are the limitations of finite automata?

Or

Explain in detail the structure of compiler. Also explain the concept of Cross Compiler.

7. Construct the NFA for the following regular expression :

$$R = (a/b)*abb$$

Or

Explain the process of minimizing the number of states of DFA.

8. Explain left recursion and left factoring with example.

Or

Differentiate between LL and LR Parser.

9. What is context free grammar? Give the left most and right most derivation for the following grammar. Also draw its derivation tree for it and check its ambiguity for id + id + id :

$$E \rightarrow E + E \mid E - E \mid E * E \mid E / E \mid id$$

Or

Differentiate lexeme, tokens and pattern. Also explain various errors encountered in different phases of compiler.

10. Explain the following : (any **two**)

(a) DAG

(b) Code generator

(c) Top down parsing

(d) Stack storage allocations