C 6253

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Name.....................

Reg. No.....................
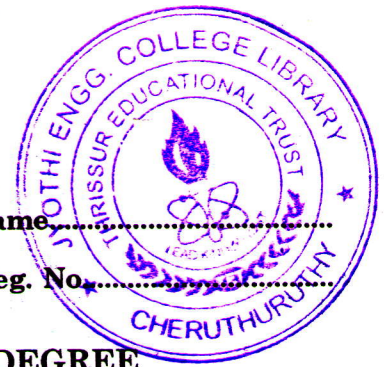
SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2005

CS 2K 605/IT 2K 606 D—COMPILER DESIGN

(New Scheme)

Time : Three Hours　　　　　　　　　　　　　　　　Maximum : 100 Marks

*Answer **all** questions.*

I. (a) How are compilers characterized ? Write short notes on Cross-Compiler.

(b) Define Regular expression. Give the rules for construction of the denoted languages along with regular expression construction rules.

(c) What is a context free grammar ? Illustrate with an example.

(d) Explain the strategy of bottom-up tree construction process and illustrate with an example.

(e) Specify the capabilities of the symbol table and the information available in a symbol table.

(f) Write an algorithm to partition the code into basic blocks for a given sequence of three address statements.

(g) What is meant by peephole optimization.

(h) Explain why scanner is separated from parser.

(8 × 5 = 40 marks)

II. (a) (i) Consider the following while-statement :—

while A > B & A < = 2 * B –5 do

A : = A + B.

Construct parse tree for while-statement and generate the intermediate code for the above while statement.

(10 marks)

(ii) Mention the different types of errors encountered by different phases of a compiler.

(5 marks)

Or

(b) Describe the design process of a lexical Analyzer and mention its role and implementation details.

(15 marks)

Turn over

III. (a) (i) Mention the rotational conventions followed to represent terminals, non-terminals, start symbol and productions and using shorthands. Write the grammar for simple arithmetic expressions.

(8 marks)

(ii) Elaborate on operator precedence parser with appropriate example. (7 marks)

Or

(b) Write the Regular expressions for the following :—

(i) All strings of a's and b's that do not contain the sub-string "add". (5 marks)

(ii) Write a Regular expression to specify a comment in "C" (5 marks)

(iii) What sets of strings do the following Regular expressions describe :—

(00/11) ((01/10) (00/11)) ((01/10) (00/11)).

(5 marks)

IV. (a) Describe in detail syntax-directed translation scheme used to specify a desk calculator program and it can be implemented by a bottom-up parser.

(15 marks)

Or

(b) Discuss in detail the different data structures available for representing symbol table and how it is possible to reuse symbol table space.

(15 marks)

V. What are the issues in generation of Intermediate code ? Illustrate with example.

(15 marks)

Or

What is code optimization ? Mention the different sources of optimization, also discuss the use of data flow graph analysis in code generation.

(15 marks)

[4 × 15 = 60 marks]