SCHOOL OF COMPUTING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

REVISION CARRIED OUT -2017-2018

2017-ODD

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Yellow color-Content added

SCS1303	COMPILER DESIGN	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT 1   INTRODUCTION   **9 Hrs.**

Components of system software - editor - debugger - linker - loader - assembler - case study.

UNIT 2 BASICS OF COMPILER   **9 Hrs.**

Compiler - Structure Of Compiler - Phases - Representation Of Lexical Phase Using Regular Expression - Representation Of Regular Expression - Finite Automata to Design Lexical Phase - Minimized DFA Algorithm.

UNIT 3 PARSER   **9 Hrs.**

Types Of Parser - Shift Reduce Parsing - Operator Precedence Parsing - Recursive Decent Parser - Non-Recursive Decent Parser.

UNIT 4 INTERMEDIATE CODE GENERATION   **9 Hrs.**

Intermediate code generation for assignment statements - boolean statements - switch case statement - symbol table generation.

UNIT 5 OPTIMIZATION   **9 Hrs.**

Optimization - issues related to optimization - loop optimization - peep hole optimization - three address code generation algorithm - examples.

                                                                          Max. 45 Hours

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 : Model a finite automata for any given regular expression. CO2 : Analyze various Parsing methods.

CO3 : Generate the intermediate code and symbol table.

CO4 : Apply code optimization methods to improve efficiency of the code CO5 : Formulate the issues involved in code Generation Process.

CO6 : Construct the target code for given source code.

TEXT / REFERENCE BOOKS

1. D M. Dhamdhere , "System Programming", 2nd Edition, Tata McGraw Hill Publishing, 1999.
2. Alfred V.Aho, Jeffery D.Ullman & Ravi Sethi, " Compiler Principles, Techniques & Tools", Addison-Wesley Publishing Company, 1986
3. Alfred V.Aho, Jeffery D.Ullman "Principles of Compiler Design", Narosa Publihing House, 15th reprint, 1996.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100   Exam Duration : 3 Hrs.

PART A : 10 questions of 2 marks each- No choice   20 Marks

PART B : 2 questions from each unit of internal choice, each carrying 16 marks   80 Marks

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		3	0	0	3	100

COURSE OBJECTIVES

- To study the structure of compiler.
- To study the working principles compilation process.

UNIT 1 LEXICAL ANALYSIS 9 Hrs

Structure of compiler – Functions and Roles of lexical phase – Input buffering – Representation of tokens using regular expression – Properties of regular expression – Finite Automata – Regular Expression to Finite Automata – NFA to Minimized DFA.

UNIT 2 Parser 9 Hrs

CFG – Derivation – CFG vs R.E. - Types Of Parser –Bottom UP: Shift Reduce Parsing - Operator Precedence Parsing, SLR parser- Top Down: Recursive Decent Parser - Non-Recursive Decent Parser.

UNIT 3 INTERMEDIATE CODE GENERATION 9 Hrs

Syntax directed translation scheme - Three Address Code – Representation of three address code - Intermediate code generation for: assignment statements - Boolean statements - switch case statement –Procedure call - Symbol Table Generation.

UNIT 4 CODE OPTIMIZATION 9 Hrs

Optimization - issues related to optimization – Basic block – Conversion of basic block to flow graph - loop optimization & its types – DAG - peephole optimization - Dominators - Data Flow optimization

UNIT 5 CODE GENERATION 9 Hrs

Issues involved in code generation – Register allocation – Conversion of three address code to assembly code using code generation algorithm – examples – Procedure for converting assembly code to machine code – Case study

Max. 45 Hours

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1. Alfred V.Aho, Jeffery D.Ullman & Ravi Sethi, " Compiler Principles, Techniques & Tools", Addison-Wesley Publishing Company,1986.

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