Paper-I(MCA-401) : Compiler Design

UNIT- I

Introduction : Analysis of source programme, Different phases of a compiler, Symbol Table. Error Handling **:** errors in different phases of compiler. Introduction to Compiler Construction Tools.

Lexical Analysis : Different approaches to design a lexical analyzer, regular expression, finite automata (Deterministic & Non-deterministic). RE to NFA and NFA to DFA. Optimization of DFA states. Implementation of lexical analyzer.

UNIT- II

Syntax   analysis : context free grammer, Parsing techniques (Top-down, Bottom-up, Operator-precedence, SLR.

UNIT- III

Syntax Directed Translation: Syntax directed translation, construction of Syntax Trees, bottom-up evaluation of S-attributed definitions, L-attributed definitions, top-down translation, bottom-up evaluation of inherited attributes

Type Checking: Type Systems, specification of a simple type checker, equivalence of type expressions, type conversions

UNIT- IV

Run time Environment: Source language issues, stograte organization, storage allocations strategies, symbol tables

Intermediate code generation: Intermediate language, syntax directed translation, assignment statement, boolean statements and backpatching, array references, procedure calls and   record structure.

UNIT-V

Code optimization : Principal sources of optimization, Local & Loop optimization, loop invarient computations, induction variable elimination.

Code generation : Design of code generation, a machine model, a simple code generator, register allocation & assignment, code generation from DAG's.

Text/Reference Books :

1.   Principles of Compiler Design by Aho, Ullman; Narosa Publishing House, 1989
2.   Compilers : Principles, techniques and tools by Aho, Sethi, Ullman; Wesley 1988
3.   Compiler Construction : Theory & Practice by Barrat, Eates, Cought, Galgotia 1988
4.   Compiler Writing by Trembly, Sorenson ; Mc-Graw Hill Book Co.
5.   Compiler Construction for Digital Computer by Gries; John Willey & Sons, New York – 1987