

Theory of Computation

UNIT I (10T)

Introduction to Mathematical preliminaries: Sets, Functions and Relations, graphs and trees, Strings and their Properties, Proof techniques: By induction, by contradiction.

UNIT II (10T)

Formal languages: Definitions and examples, Chomsky classification of languages, Languages and their relation, Recursive and Recursively enumerable sets, Languages and automata.

UNIT III (20T)

Theory of Automata: Definition of automaton, description of a finite automaton, DFA, transition systems, properties of transition functions, acceptability of a string by a finite automaton, Non deterministic finite state machines: with epsilon moves and without epsilon moves, equivalence of DFA and NDFA, Mealy and Moore Models, minimization of finite automata. Regular sets and grammar: Regular expressions, Finite automata and regular expressions, closure properties of regular sets, Algebraic laws for regular expressions, regular sets and regular grammars

UNIT IV (20T)

Context free languages: Context free languages and derivation trees, Ambiguity in context free grammars, Simplification of context free languages, normal forms for context free languages.

UNIT V (20T)

Pushdown automata: Definition, Acceptance by PDA, Pushdown automata and Context-free languages, Parsing and Pushdown Automata. Turing Machines: Turing machine model, representation of Turing machines, languages accepted by Turing machine.