

M.Tech. (IT): Group A
Paper Code: MT23A
Paper Title: Automata

SYLLABUS

1. Mathematical Object And Induction

Sets, Logic, Functions, Relations, Languages, the principle of mathematical induction

2. Finite Automata and non-deterministic automata

Finite automata, Union, intersection and complements, Non deterministic finite automata, Kleene's theorem

3. Regular languages and regular expressions

A criterion for regularity, regular language, Minimal finite automata, Decision problems, the pumping lemma for regular languages

4. Context –free grammars

Context-free grammars, Regular grammars, Derivation trees and ambiguity, an unambiguous CFG for algebraic expression, Simplified forms and normal forms

5. Pushdown Automata

Pushdown Automaton, Deterministic Pushdown Automata, Parsing

6. Turing Machines

Turing Machine, Non-deterministic Turing machines, Combining Turing machines, Universal Turing machines

7. Unsolvable Problems

A Non recursive language and an Unsolvable problem, the Halting problem, Post's correspondence problem

REFERENCE 'S BOOKS

- 1) "Theory of Computer Science" K L P Mishra and N.Chandra sekaran- PHP
- 2) "Introduction to Languages and the Theory of Computation" John Martin –Tata Mc-Graw Hill Edition
- 3) "Elements of the Theory Of computation " Harry R Lewis and Christos H Papadimitrion- PHP