

**UNIT I****Chapter 1 : Fundamentals****1-1 to 1-11****Syllabus :**

The Role of Algorithms in Computing - What are algorithms, Algorithms as technology, Evolution of Algorithms, Design of Algorithm, Need of Correctness of Algorithm, Confirming correctness of Algorithm - sample examples, Iterative algorithm design issues.

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Functional Model - Features, Recursive processes, Scope rules, Tail recursion, Checking correctness of Iterative process. Imperative Model - Basics, Specifications and Prototyping, Stepwise Refinement, Proof Rules - Basics, For loops, Goto and Exit loops, Functions and Procedures, Problem Solving using Greedy strategy - Knapsack problem, Huffman code generation algorithm.

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UNIT IV

Chapter 8 : Complexity Theory 8-1 to 8-18

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UNIT V

Chapter 9 : Amortized Analysis 9-1 to 9-33

Syllabus :

Amortized Analysis – Binary, Binomial and Fibonacci heaps, Dijkstra's Shortest path algorithm, Splay Trees, Time-Space tradeoff, Introduction to Tractable and Non-Tractable Problems, Introduction to Randomized and Approximate algorithms, Embedded Algorithms: Embedded system scheduling (power optimized scheduling algorithm), sorting algorithm for embedded systems.

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UNIT VI

Chapter 10 : Multithreaded and Distributed Algorithms 10-1 to 10-16

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Multithreaded Algorithms - Introduction, Performance measures, Analyzing multithreaded algorithms, Parallel loops, Race conditions. Problem-Solving using Multithreaded Algorithms - Multithreaded matrix multiplication, Multithreaded merge sort. Distributed Algorithms - Introduction, distributed breadth-first search, Distributed Minimum Spanning Tree. String Matching- Introduction, The Naive string matching algorithm, The Rabin-Karp algorithm

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