

# ADVANCED DATA STRUCTURE AND ALGORITHM – MCS-11

Theory Paper – 100 Marks

Sessional – 50 Marks

## Unit I

Introduction to basic data structure , Randomized algorithm, a min-cut algorithm, Las Vegas and Monte Carlo, /Binary Planner Partition , a probabilistic recurrence , computational model & complexity classes.

## Unit II

The fundamental Data-structure problem. Random treaps, Mulmuley games, analysis of treaps, skip lists.

## Unit III

Analyzing random skip lists, Hash families, strongly universal hash families , Hashing with  $O(1)$  search time, Nearly perfect hash families , achieving bounded query time storage management, markov chains .

## Unit IV

Graph connectivity, Random walks on graph , on line paging algorithm, adversary models.

## Unit V

Genetic algorithms & its application .Parallel & distributed algorithms.

## BOOKS:

- 1 Data Structure & Algorithm Analysis in C by Make Allen Weiss, Addison Wesley.