

MAJOR PAPER – II : DATA STRUCTURES AND ALGORITHMS IN C++

UNIT – I

Introduction to the Basic concepts of C++ Language – Token's, Keywords, Data types, variables, manipulators – Expression and Control structures – Functions – Function prototyping – call by reference – Function overloading – friend and inline functions – classes and objects – constructors and Destructors.

UNIT – II

Operator overloading – Type conversions – Inheritance – Single, multiple, Hierarchical, Hybrid – Polymorphism – Pointers – Virtual functions – Console I/O Operations.

UNIT – III

Files – classes for file stream operations – Opening, Closing and Processing files – End of file detection – File pointers – Updating a file – Error Handling during file operations – Command line arguments – Templates – Exception Handling.

UNIT – IV

Linked lists – Singly linked list, Doubly linked lists, Circular lists, Skip lists, Self-Organizing list – Sparse Tables – Standard Template – Stacks and Queues priority Queues, Stacks, Queues, Priority Queues in the Standard Template Library.

UNIT – V

Binary Trees – Trees, Binary Tree, Binary search Trees, Implementation Binary Trees, Searching a Binary search Tree, Tree Traversal – Insertion – Deletion – Balancing a Tree – Self – Adjusting Trees – Heaps – Polish notation and Expression Trees – Sorting: Insertion, Selection, Bubble, Heap and Quick sort methods.

Books for Study:

1. "Object Oriented Programming with C++" – E.Balagurusamy, Tata McGraw Hill, Publishing Limited, New Delhi- 1995.
2. "Data structures and Algorithms in C++" – Adam Drozdek, Vikas Publishing House, New Delhi – 2001.

Books for Reference:

1. "Object Oriented Programming in C++", - Robert Lafore, Galgotia, 1994.
2. "C++ - The Complete Reference" – Herbert Schitt, 3rd Edition, Tata McGraw Hill, Publishing Limited, 1999.
3. "Fundamentals of Data Structure – Ellis Horowitz and Sartaj Sahir", Galgotia Publications.