

## **II B.Sc (Computer Science) / III Semester**

### **C++ And Data Structures**

#### **UNIT I**

Principles of Object Oriented Programming(OOP) - Software Evaluation - OOP Paradigm - Basic Concepts of OOP - Benefits of OOP - Application of OOP.

#### **UNIT II**

Introduction to C++ - Tokens - Keywords - Identifiers - Variables - Operators - Manipulators - Expressions and Control Structures - Pointers - Functions - Function Prototyping Parameters Passing in Functions - Values Return by Functions - Inline Functions - Friend and Virtual Functions.

#### **UNIT III**

Classes and Objects - Constructors and Destructors - Operator overloading - Type of Constructors - Function Overloading – Inheritance – Types of Inheritance – Virtual Functions and Polymorphism.

#### **UNIT IV**

Definition of a data structure – Primitive and Composite data types - Asymptotic notations – Arrays – Operations of Arrays – Order lists – Stacks – Applications of Stack – Infix to Postfix Conversion – Recursion – Queues – Operations of Queues.

#### **UNIT V**

Singly linked list – Operations – Doubly linked list – Operations – Trees and Graphs : Binary tree – Tree traversal; Graph – Definition – Types of Graphs – Traversal(BFS & DFS) – Dijkstra`s algorithm.

#### **Books for Study**

1. E. Balagurusamy - Object Oriented programming with C++ - TMH.
2. Robert Lafore - Object Oriented Programming in Microsoft C++ - Galgotia.
3. E. Horowitz and S.Shani Fundamental of data structure in C++, Galgotia Pub. 1999.
4. Horowitz, S.Shani and S.Rajasekaran, Computer algorithms, Galgotia Pub. Pvt Ltd 1998.