Paper Code: BCA 209 **L T C**
Paper ID: 20209 **3 1 4**
Paper: Object Oriented Programming using C++
Pre-requisites:

- **BCA-105(Introduction to Programming using 'C')**
- **Data Structure Concepts**

Aim: To understand the basics of Object Oriented Programming and their applications.
Objectives:

- To gain knowledge of objects, Class, Data Abstraction, Encapsulation, Inheritance, Polymorphism and Dynamic Binding.
- To know about constructing programs using Bottom-up design approach.

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks : 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT – I

Introduction: Introducing Object-Oriented Approach, Relating to other paradigms (functional, data decomposition). Features of Procedure oriented programming, Basic Concepts of Object Oriented Programming, Benefits of OOP, Applications of OOP, Difference between C and C++, cin, cout, new, delete operators.
C++ Environment: Program development environment, the language and the C++ language standards. C++ standard libraries.
Introduction to various C++ compilers, C++ standard libraries, Testing the C++ program in Turbo C++/Borland C++/MicroSoft VC++/GNU C++ compiler. [T1][T2][T3]

[No. of Hrs: 12]

UNIT – II

Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, references, this pointer, Function Overloading, Constructors and destructors, instantiation of objects, Default parameter value, C++ garbage collection, dynamic memory allocation, Meta class/abstract classes.[T1][T2]

[No. of Hrs. 12]

UNIT – III

Inheritance and Polymorphism: Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, composition v/s classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by parameter, Operator overloading, Parametric polymorphism, Virtual Function, Early v/s Late Binding.[T1][R2] **[No. of Hrs: 10]**

UNIT – IV

Generic Programming – Introduction, templates, template functions, Overloading of template functions, Overriding inheritance methods.

Files and Exception Handling: Persistant objects, Streams and files, Namespaces, The basic stream classes: C++ predefined streams, Error handling during file operations, Command Line Arguments. Types of Exception, Catching and Handling Exceptions.[T1][T3]

[No. of Hrs: 10]

TEXT BOOKS

[T1] Ashok N. Kamthane, "Object-Oriented Programming With Ansi And Turbo C++", Pearson Education.
[T2] A.R.Venugopal, Rajkumar, T. Ravishanker "Mastering C++", TMH, 1997.
[T3] E. Balguruswamy, **"C++ "**, TMH Publication ISBN 0-07-462038-x .

REFERENCE BOOKS

[R1] Mahesh Bhave, "Object Oriented Programming with C++", Pearson Education.
[R2] D . Parasons, "Object Oriented Programming with C++", BPB Publication.
[R3]Steven C. Lawlor, "The Art of Programming Computer Science with C++", Vikas Publication.
[R4] Schildt Herbert, "C++: The Complete Reference", 4th Ed., Tata McGraw Hill, 1999.
[R5] R. Lafore, "Object Oriented Programming using C++", Galgotia Publications, 2004.