BCA-4-03T: Object Oriented Programming

Total Marks: 100
External Marks: 70
Internal Marks: 30
Credits: 4
Pass Percentage: 40%

INSTRUCTIONS FOR THE PAPER SETTER/EXAMINER

1. The syllabus prescribed should be strictly adhered to.
2. The question paper will consist of three sections: A, B, and C. Sections A and B will have four questions from the respective sections of the syllabus and will carry 10 marks each. The candidates will attempt two questions from each section.
3. Section C will have fifteen short answer questions covering the entire syllabus. Each question will carry 3 marks. Candidates will attempt any ten questions from this section.
4. The examiner shall give a clear instruction to the candidates to attempt questions only at one place and only once. Second or subsequent attempts, unless the earlier ones have been crossed out, shall not be evaluated.
5. The duration of each paper will be three hours.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any two questions each from the sections A and B of the question paper and any ten short questions from Section C. They have to attempt questions only at one place and only once. Second or subsequent attempts, unless the earlier ones have been crossed out, shall not be evaluated.

Course: Object Oriented Programming	
Course Code: BCA-4-03T	
Course Outcomes (COs) After the completion of this course, the students will be able to:	
CO1	Develop understanding of writing object-oriented programs that combine functions and data.
CO2	Gain a thorough understanding of the core principles of OOP, including encapsulation, inheritance, and polymorphism.
CO3	Learn how to apply OOP concepts to solve programming problems, design software systems, and develop reusable code.
CO4	Understand how to create classes and objects in a programming language that supports OOP
CO5	Learn how to use inheritance to create hierarchies of classes and reuse code efficiently.

Detailed Contents:

Module	Module Name	Module Contents
Section-A		
Module I	**Introduction to OOP**	**Introduction to OOP:** • Basic concepts (objects, classes, inheritance, polymorphism, encapsulation) • Advantages of OOP over procedural programming **Classes and Objects:** • Declaring classes • Creating objects • Access specifiers (public, private, protected) • Constructors and destructors • Static members
Module II	**Inheritance and Polymorphism**	**Inheritance:** • Base and derived classes • Types of inheritance (single, multiple, multilevel, hierarchical) • Access control in inheritance **Polymorphism:** • Function overloading • Operator overloading • Virtual functions and runtime polymorphism • Abstract classes and pure virtual functions
Section-B		
Module III	**Encapsulation and Interfaces and Abstract Classes**	**Encapsulation:** • Data hiding • Accessor and mutator methods • Benefits of encapsulation **Interfaces and Abstract Classes:** • Declaring interfaces • Implementing interfaces • Abstract classes and methods
Module IV	**Exception Handling and File Handling**	**Exception Handling:** • Handling exceptions using try-catch blocks • Throwing exceptions • Custom exceptions **File Handling:** • Reading from and writing to files • File streams (File Input Stream, File Output Stream, etc.)

Reference Books:

- Herbert Schildt, “The Complete Reference C++”, Tata McGraw-Hill.
- Deiteland Deitel, “C++ How to Program”, Pearson Education.
- Robert Lafore, “Object Oriented Programming in C++”, Galgotia Publications.
- Bjarne Strautrup, “The C++ Programming Language”, Addition-Wesley Publication Co.
- Stanley B. Lippman, Josee Lajoie, “C++ Primer”, Pearson Education.
- E. Balagurusamy, “Object Oriented Programming with C++”, Tata McGraw-Hill