MCA-14-22 OBJECT ORIENTED PROGRAMMING USING C++

Maximum marks: 100 (External: 80, Internal: 20) **Time: 3 hours**

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Introduction: Object-Oriented features of C++, Comparison of C with C++, Class and Objects, Inline functions, Static data members and member functions, Read-Only objects, Pointers, Dynamic memory allocation and deallocation, constructors and destructors, Dynamic objects, array of pointers to object, local and global class, nested and empty class, preprocessor directives, Header files and namespaces. Console I/O: Hierarchy of console stream classes, unformatted and formatted I/O operations, Manipulators.

UNIT – II

Compile-time Polymorphism: Operator Overloading-overloading unary and binary arithmetic and relational operators, overloading subscript, insertion, extraction, new and delete operators; function overloading

Friend Function and Friend Class: Friend function, overloading operators by friend function, friend class

Type Conversion: Basic type conversion, conversion between Objects and Basic Types, conversion between objects of different classes.

UNIT – III

Inheritance: Base and Derived Classes, Protected Members, Casting Base-Class Pointers to Derived-Class Pointers, Using Member Functions, Overriding Base-Class Members in a Derived Class, Public, Protected and Private Inheritance, Using Constructors and Destructors in derived Classes, Implicit Derived-Class Object To Base-Class Object Conversion, Composition Vs. Inheritance.

Virtual Functions & Derivations: Virtual functions and their needs, Pure virtual function, virtual destructor, virtual derivation, abstract class.

UNIT – IV

Generic Programming: Function Templates, Overloading Template Functions, Class Template, Class Templates and Non-Type Parameters.

Exception Handling: Try, Throw, Catch, Throwing an Exception, Catching an Exception, Re-throwing an Exception.

File Handling: Hierarchy of File Stream classes, Opening and Closing files, File modes, testing for errors, File pointers and their manipulations, ASCII & Binary files, Sequential and Random access files.

Text Books:

1. Bjarne Stroustrup, “The C++ Programming Language”, Pearson Education.
2. Balaguruswami, E., “Object Oriented Programming In C++”, Tata McGraw-Hill.

Reference Books:

1. Herbert Shildt, “C++: The Complete Reference”, Tata McGraw-Hill.
2. Joyce Farrel., “Object Oriented Programming Using C++”, Cengage Learning.
3. Forouzan, Gilberg, “Computer Science: A Structured Programming Approach Using C++”, Cengage Learning.
4. Robert Lafore, “Object Oriented Programming in C++”, Techmedia SAMS.
5. Bhave M.P., Patekar S.A., “Object Oriented Programming with C++”, Pearson Education.