

Class XII
COMPUTER APPLICATION
Semester-I

Time: Theory: 3 hrs

Internal: 70 Marks
CCE/Internal Assessment: 10 Marks
Total: 80 Marks

THEORY

Time: 3 hrs

Marks: 70

Unit wise distribution of Marks
Semester-I

Unit-I	Boolean Algebra
Unit-II	Structures
Unit-III	Constructors, Destructors and Function Overloading

STRUCTURE OF QUESTION PAPER

- (i) The Theory Question Paper will consist of 24 Questions. Question No. 1 to 11 will be of 1 mark each. Question No. 12 to 20 will be of 3 marks each and Question No. 21 to 24 will be of 8 marks each. Question No. 1 to 11 will be compulsory. The question paper will be evenly distributed from the syllabus prescribed for Semester-I.
- (ii) There will be no choice in Question No. 1 to 20, however internal choice may be given in question No. 21, 22, 23 and 24.

SYLLABUS
Semester-I

UNIT-I - BOOLEAN ALGEBRA

Boolean Algebra

- Introduction to Boolean Algebra
- Difference between Boolean Algebra and Switching Algebra
- Binary Valued Quantities and Bistable devices
- Truth Tables
- The Principle of Duality

Theorems of Boolean Algebra

Idempotent law, Commutative law, Associative law, Distributive law, Absorption law, Demorgan's law and its applications

Boolean Functions

Minimization of Boolean Function

Complement of a function

Canonical forms for Boolean Functions

Karnaugh Map

Logic Gates- And Gate, OR Gate, NOT Gate, NAND Gate, NOR Gate.

Logical Circuits

Converting Expression to Logic Circuits

The Universal NAND Gate

The Universal NOR Gate

Exclusive Or and Equivalence Functions

Design combination circuits

Design of Half Adder

Design of Full Adder

Encoder Decoder

UNIT-II STRUCTURES

Defining a Structure

Referencing Structure elements

Nested Structures

Structures and Arrays

Passing Structure to Functions

User defined data types

Use of Declaration

Enumerated Data types

Classes and Objects

Classes, Declaration of Classes, Scope of Class and its members

Data Members, Member Functions

Default labels

Data hiding and encapsulation

Arrays within a class, Functions in a class, Inline Functions

Private and Public member function

Nesting of Member functions

Using objects, Arrays of objects

Accessing class data members, Accessing member functions

Objects as function arguments

Static Class members

UNIT-III CONSTRUCTORS, DESTRUCTORS AND FUNCTION OVERLOADING

Constructors

- Need for Constructors
- Declaration, Definition and Characteristics
- Default Constructors
- Parameterized constructors
- Copy constructors
- Dynamic Initialization of objects

Destructors

- Declaration, Definition and Characteristics
- Function Overloading
- Steps involved in finding the best match

54. COMPUTER APPLICATION SEMESTER-II

Time: Theory: 3hrs

Theory: 70 Marks

CCE/Internal Assessment: 20 Marks

Total: 90 Marks

THEORY

Time:3hrs

Marks: 70

Unit Wise Distribution of Marks

Unit-I Inheritance and Pointers

Unit-II Data Structures

Unit-III File Handling in C++

Unit-IV Introduction to Database Concepts

Unit-V Data Communications & Computer Networks

STRUCTURE OF QUESTION PAPER

- (i) The theory Question Paper will consist of 24 Questions. Question No. 1 to 11 will be of objective type and 1 mark each. Question No. 12 to 20 will be 3 marks each and Question No. 21 to 24 be of 8 marks each. Question No. 1 to 11 will be compulsory and it will be from syllabus prescribed for Semester-I and Semester-II
- (ii) There will be no choice in Question No. 1 to 19, however, internal choice may be given in question No. 21 to 24.

SYLLABUS SEMESTER-II

UNIT I – INHERITANCE AND POINTERS

Inheritance: Extending Classes

Need for Inheritance

Derived and Base classes visibility modes

Single Inheritance & Multilevel inheritance

Access control in Privately derived class & Publicity derived class

Making a private member inheritable

Pointers

C++ Memory Map

Dynamic and static memory allocation

Declaration and Initialization of Pointers

Dynamic Allocation Operators

Pointers and Arrays

Pointers and Functions
Pointers and Structures

UNIT II – DATA STRUCTURES

Introduction & Elementary Data Representation
Different data structure – Arrays, Stacks and Queues, Linked Lists, Binary Trees
One and two dimensional Arrays
Sequential allocation and address calculation
Algorithm for one Dimensional arrays, Traversal, Search (Linear and Binary)
Insertion, deletion, sorting, merging
Implementation of above concepts in c++

UNIT III – FILE HANDLING IN C++

File Organization
Basic Technology
Logical Data Organization
Different file Operations
File organization and access mode
Sequential File, Direct Access Organization, Indexed Sequential Organization
Access modes
File handling in C++

UNIT IV – INTRODUCTION TO DATABASE CONCEPTS

Purpose of database
Database abstraction – Various levels of database implementation
Different Data Models – Relational, Network, Hierarchical
Relational Data Model
Terminology, Views, Structure of Relational Database
Normalization – First, Second, Third normal forms
Comparison of data models

UNIT V – DATA COMMUNICATIONS AND COMPUTER NETWORKS

Local Area Network and Wide Area Networks
Networking Topologies
Communication Protocols
Base elements of a communication system
Transmission Media – Wire pairs, Coaxial cable, and Microwave system

Communication Satellites, Optical fibers
Data Transmission Models – Simplex, Half–duplex, Full-duplex

PRACTICAL

Time:3hrs

Marks: 30

Evaluation Scheme for Practical

1. Programming in C++ **(10 Marks)**

One programming problem in C++ to be solved during the examination on computer. Marks for the programming are to be given on the basis of program documentation/indentation, algorithm and result (output)

2. Project Work **(6 Marks)**

Project must be taken up from the real life problems.

Marking scheme for the project:

- Programming Style, Structured Design 2 Marks
- User-friendly Input/Output and online help 2 Marks
- Documentation (User Manual) 2 Marks

3. Data Base Concepts **(4 Marks)**

4. Viva-Voce **(5 Marks)**

5. Practical record file **(5 Marks)**

Record of at least 20 programs in C++ (with listing and Outputs) based on programming concepts and 5 on data base concepts

SYLLABUS

All the relevant practical exercise will be based upon the relevant chapters mentioned in the Theory Syllabus.