**Mid Semester Examination – October 2024**

**Programming in C++ with Examples Lab (AM1651-1)**

1. Write a C++ program to read the data of N employees and compute the Net salary of each employee (DA=52% of Basic and Income Tax (IT) = 30% of the gross salary). For that, create an Employee class with Employee number, Employee name, Basic, DA, IT, Net Salary.

(**Concept**: Array of Objects)

1. Write a C++ program with two classes ABC and XYZ with one integer data member in each class. Write member functions to read and display, place a friend function called max() in these classes which takes the data members of these classes and computes a maximum of two data members.

(**Concept**: Friend function and Reference variable.)

1. Write a program to find the largest, smallest & second largest of three numbers. (use inline function MAX and MIN to find largest & smallest of 2 numbers)

(**Concept:** Inline function)

1. Write a Program to design a class having a static member function named ShowCount() which has the property of displaying the number of objects created of the class.

(**Concept:** Applications of the Static keyword)

1. Write a C++ program to find the volume of a cylinder, sphere and cube.

(**Concept:** Function overloading)

1. Write a C++ program to demonstrate the working of a copy constructor. Implement a class called Point with private data members X and Y as the points and getX() and getY() are the getter functions to get the values and print the same using the main() function.

(**Concept**: Copy constructor)

1. Write a C++ program to create a class Data with integer, character and float data members. Demonstrate Constructor Overloading on this class with all types of constructors including default argument constructor.

(**Concept:** Constructor Overloading)

1. Write a C++ program to apply bubble sort on an array of integers and float using the concept of function template. (**Concept**: Class Template)
2. Write a C++ program to read and print employee information using multiple inheritance. Create 2 base classes namely BasicInfo and DeptInfo which contains getBasicInfo() and getDeptInfo() respectively to read the information.

(**Concept:** multiple inheritance.)

1. Write a C++ program to demonstrate the uses of constructors in derived class concepts. The three classes that can be created are Alpha, Beta and Gamma in this order having an “is-a” relationship. Create at least one data member and one member function in each class. That is n1 and putAlpha() in Alpha class, n2 and putBeta() in Beta class, n3 and putGamma() in Gamma class.

(**Concept:** Use of Constructors in Derived Classes.)