VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY (VSSUT), ODISHA

Odd Mid Semester Examination for session 2024-25

SEMESTER: 3rd

COURSE NAME: B.Tech

BRANCH NAME: CSE, IT

SUBJECT NAME: Object-Oriented Programming

TIME: **90 Minutes**

FULL MARKS: **30**

Answer **All** Questions.

The figures in the right hand margin indicate Marks. *Symbols carry usual meaning.*

[2 × 3]

Q1. Answer all Questions.

a) Distinguish between data abstraction and data encapsulation with example. - CO1

b) What is a parameterized constructor? Give example. - CO2

c) Define friend function. Why an object is passed as an argument in this function? - CO3

[4+4]

Q2.

a) What are the advantages of object-oriented programming and how it is different from procedural oriented programming? - CO1

b) Write a C++ program to check a year is leap year or not.

OR

a) What is function prototype. Write a C++ program to calculate the simple interest and compound interest for a given principal and time period. - CO1

b) Describe the application of Scope resolution operator in C++ with examples.

[8]

Q3.

Define a class to represent a bank account. Include the following members: Data members: Name of depositor, Account number, Type of account, Balance amount in the account. Member functions: To Assign initial values, to modify the amount, to withdraw an amount after checking the balance, to display name and balance. Now give proper definition to the main function for opening account, withdraw money from account and displaying the remaining balance. - CO2

OR

Create N number of vehicle objects from Vehicle class. The Vehicle class contains Vehicle brand, color, weight, max_speed, mileage as data members. Write appropriate member functions for initialization and displaying the properties of vehicle objects. Add a static member function called change_color () to the class for changing the color of any one object of the same class. Considering the above scenario describe the roll of static member function. - CO2

[4+4]

Q4.

a) Write a program to overload the binary addition operator for concatenating two strings. - CO3

b) Create a class Time having data members hours, minutes and seconds. Use appropriate members function for initialization and display the properties of Time objects. Now define a friend function for adding two Time objects.

OR

a) Define copy constructor. Create a class called bike having data members color, weight, mileage etc. Overload the constructors to create four different bike objects. Now use copy constructors to create 5 numbers of replicated objects from each of the initial four objects and displays its properties. - CO3

b) Create a class distance having data member meters and centimeters. Create another class measurement having data members feet and inches. Write a friend function to convert distance in meters and centimeters to feet and inches.