

ES203

Enrol. No.

[ET]

**END SEMESTER EXAMINATION : NOVEMBER-
DECEMBER, 2023**

**OBJECT ORIENTED PROGRAMMING
USING C++**

Time : 3 Hrs.

Maximum Marks : 60

Note: Attempt questions from all sections as directed.

SECTION – A (24 Marks)

Attempt any four questions out of five.

Each question carries 06 marks.

1. State the unique advantages of Object Oriented Programming paradigm. Also focus on message passing and dynamic binding concept.
2. (a) Write a C++ program to dynamically allocate an array of integers and strings also initialize its elements.

(4)

P.T.O.

(b) Suppose that the following code fragment is executed.

```
const int LENGTH = 21;
```

```
char message[LENGTH];
```

```
cout << "Enter a sentence on the line below." <<  
endl;
```

```
cin.getline(message, LENGTH, '\n');
```

```
cout << message << endl;
```

In the prompt, the interactive user types the following line and presses Enter: Please go away.

What will the output of the code fragment look like? (2)

- 3 (a) Write a program in C++ to illustrate the use of inline member function. Also discuss the similarity and dissimilarity in macro and inline function. (3)

(b) Distinguish between the following two statements

Distance D2(D1);

Distance D2=D1; (3)

4. Explain the visibility of base class members for the access specifiers: private, protected and public while creating the derived class and also explain the syntax for creating derived class.

5. (a) What is meant by virtual base class. What is its use? Give a suitable example. (3)
- (b) Write a program to make a function "account" that can access the private members of two different classes "Employee" and "Student" using the concept of friend function. (3)

SECTION – B (20 Marks)

Attempt any two questions out of three.

Each question carries 10 marks.

6. Write a program to create a class DATE having data members DD,MM,YY.
- (i) constructor to initialize the data members

(ii) show () to display date

(iii) overload ++ operator to increment date by one day

(iv) overload - operator to decrement date by one day.
Consider one month = 30 days (8)

(b) Why there is a need of static variable in a class?
(2)

7. Create a class name RealEstate that has data member to hold the price of a house, the number of bedrooms and the number of bathrooms.

Write a main function that instantiates a RealEstate object, allows the user to enter data and displays the data member entered. Also the main () function should display an appropriate thrown error message if non-

numeric or negative values are entered for any of the data member.

8. Create a program that uses multiple inheritance and contain functions having same name in both the base classes. Solve the ambiguity using

(a) Overriding the derive class function

(b) Scope resolution operator (5)

- (b) Discuss the various file mode operations available in C++. Also write a program to read the content of a file and store the content in reverse order in other file. (5)

SECTION – C **(16 Marks)**
(Compulsory)

9. Create a base class Electricity where an electricity board charges the following rates to domestic users discourage large consumption of energy:

For first 100 units: 50 paise

For next 200 units: 60 paise

Beyond 300 units: 150 Paise

All NCR users are charged a minimum of Rs 3000/-
- If total cost is more than Rs. 2000.00 an additional surcharge of 20% is added.

Create a derive class Bill to Implement a code to add necessary data member and member function to read the name of users and number of units consumed. Accordingly print the charges with names. Use Array of Objects

(10)

P.T.O.

- (b) Write a C++ Program to Swap data using function template. Also mention how it is different from class template (6)