H Roll No. .....

TCS–307

B. TECH. (CSE) (THIRD SEMESTER)

MID SEMESTER EXAMINATION, 2022

OBJECT ORIENTED PROGRAMMING WITH C++

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any ***one*** of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) Assume you have two methods with the same name but different behaviours in different spaces. Both methods are required in your current program. Write programs that solve the scenario in every possible way.

P. T. O.

Example :

Consider the show( ) method, which is defined in different namespaces with different definitions. You can consider the definition of show( ) method from your side. 10 Marks (CO1)

OR

(b) Discuss the significance of the wchar_t data type with example. Also WAP in C++ to compare two strings using compare method with given strings s1 = "Myworld" and s2 = "myworld". Also find out which string is greater than other and explain why ? 10 Marks (CO1)

2. (a) The user wants the following operations on ten integer numbers :

(i) Sort in ascending order

(ii) Search for any specific number

Write different functions that help the user to solve these problems. 10 Marks (CO1)

OR

(b) An electricity board charges the following rates to domestic user to discourage large consumption of energy. For the first 100 units : 60 P per unit for the next 200 units : 80 P per unit beyond 300 units : 90 P per unit. All user are charged a minimum of ₹ 50 if the total amount is more than ₹ 300, then an additional surcharge of 15% is added. WAP to read the names of users and number of units consumed and display the charges with names. 10 Marks (CO1)

3. (a) Create a student class with properties like studentName, rollNo, address, branch, and universityName. Write the properties in a way that requires them to be hidden. To set and find the values of all the properties, the Student class will have different functions. Create this class in such a way that it adheres to the best memory management practices. Use this class to enter and display the values of all the properties. 10 Marks (CO2)

OR

(b) Write a C++ program to compute the tax according to the given conditions in table-02 and display the output. Use table-01 to create respective class : 10 Marks (CO1)

Table-01	
Data Members	**Description**
Pan	To store personal account number
Name	To store name
Tax Income	To store annual taxable income
Tax	To store tax that is calculated
Member Function	**Description**
inputInfo( )	Store the pan number, name, taxable income
taxCalc( )	Calculate tax for an employee
displayInfo( )	Output details of an employee

Table-02	
Total Annual Taxable Income	**Tax Rate**
Upto ₹ 2,50,000	No tax
From ₹ 2,50,000 to ₹ 3,00,000	10% of the income exceeding ₹ 2,50,000
From ₹ 3,00,000 to ₹ 4,00,000	₹ 5,000 + 20% of the income exceeding ₹ 3,00,000
Above ₹ 4,00,000	₹ 25,000 + 30% of the income exceeding ₹ 4,00,000

4. (a) Discuss constructors and destructors with the support of programs. WAP in C++ to show the constructors overloading.

10 Marks (CO2)

OR

(b) Write a C++ program that maintain a count of the number of objects created to a particular class. 10 Marks (CO2)

5. (a) What are binary and unary operator overloading in C++ ? WAP in C++ to overload "+" operator so int + String operation can be performed.

Example : string s = "Amit" + 123

10 Marks (CO1 and CO2)

OR

(b) (i) Explain with example, do inline function improve performance. Also list the restrictions that are applied to inline functions.

(ii) What is a default argument in C++ ? Explain with an example. Also discuss in which case default argument passing is not allowed.

10 Marks (CO1 and CO2)