## END SEMESTER EXAMINATION 2025

*Name of the Program*: B.Tech (ECE) *Semester:V*
*Name of the Course*: OOP USING C++ *Course Code: TEC 506*

Time: 3 Hours Maximum Marks: 100

Note:-

(i) **All questions are compulsory.**
(ii) **Answer any two sub questions among a, b & c in each main question**
(iii) **Total marks in each main question is twenty.**
(iv) **Each subquestion question carries 10 marks**

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| Q1 | (20 marks) | |
| (a) | Explain the requirement of namespaces in C++.Implement a C++ program to demonstrate the concept of nested namespaces. ***(CO1,CO5)*** | |
| (b) | Construct a C++ program to create a class called Test with following members:<br>**Data Members:**<br>string str<br><br>**Member Functions:**<br><br>Void inputVal(string) : This member function will store value into str.<br><br>void showVal() : This member function will print value of str<br><br>void checkVal() :This member function will check whether first and second last character of str string is equal or not.<br><br>In main function create object of class Test and perform the above task. | ***(CO1,CO2,CO3)*** |
| (c) | Overload stream insertion << and stream extraction >> operator using friend function only | (CO2 ,CO3) |
| Q2 | (20 marks) | |
| (a) | Classify different types of inheritance with the help of a neat diagram. Can private members of the base class be accessed by the derived class? If yes, how? | (CO4,CO5) |
| (b) | Explain Exception in C++? How it is handled in C++. Describe all the keywords involved in exception handling by implementing it with a C++ Program. | |
| (c) | Implement a C++ program to overload post increment ++ operator. | (CO3) |
| Q3 | (20 marks) | |
| (a) | Implement by creating a class called 'Time' that has three integer data members for hours, minutes and seconds. Define a member function to read the values, member function to add time, member function to display time in HH:MM:SS format.<br><br>Implement a C++ program to create two time objects, add them and display the results in HH:MM:SS format. | (CO2,CO3) |

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| (b) | What is multiple inheritance? When does an ambiguity arises in multiple inheritance? How it can be resolved? | (CO4) |
| (c) | Explain the requirement of using friend function. Develop a C++ program to swap the value of data members present in two different classes with the help of friend function. | (CO2,CO3) |
| Q4 | (20 marks) | |
| (a) | (i) What is "this" pointer? Give an example to illustrate the use of it in C++.<br>(ii) Differentiate between static member and instance member. | (CO1,CO2,CO4) |
| (b) | Define a class named TestData with following description:<br>Data Members<br>private int num1,num2`<br><br>Constructor TestData(int,int) Constructor will store value in num1,num2.<br><br>member function void buzzno( ) → This member function will find buzz number between num1 and num2<br><br>Note: Condition for buzz number are (i) Divisible by 7 or<br>(ii) Last digit is 7 or (iii) Sum of digit is 7 | (CO2,CO4) |
| (c) | Create an abstract class ValidateData with following pure virtual function:<br><br>virtual void checkdata(string)=0;<br><br>Create a class Person which inherits abstract class ValidateData and override the function.<br><br>void checkdata(String) method will check whether all alphabets are in uppercase or not.. | (CO5) |
| Q5 | (20 marks) | |
| (a) | Differentiate between virtual function and pure virtual function in C++? Explain with the help of C++ program. | (CO5) |
| (b) | Implement a C++ program to read the content from a file and again write the same content in another file. Assume the name of source file is myfile.txt and destination file name is dest.txt. | (CO4,CO5) |
| (c) | Explain with the help of proper C++ program the concept of function template and class template in C++. | (CO3,CO4) |