Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Object-Oriented Programming **Semester: I**

Program: B.Tch.(Engg.)- Mech./Mechatronics/ADE/Aerospace/Electronics and Communication/Electronics and Computer Science/Chemical/Civil/Applied Petroleum(Upstream) **Time: 03 hrs.**

Course Code: CSEG1008 **Max. Marks: 100**

Instructions: All questions are compulsory.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Describe the advantages of Object-oriented programming language over procedural-based programming language.	**4**	**CO1**
Q 2	Explain 3 different types of loop control statements with pseudo-code and flowchart.	**4**	**CO1**
Q 3	Explain this pointer in C++ with a suitable example.	**4**	**CO2**
Q 4	Describe the term polymorphism with suitable examples. Explain in brief function overloading.	**4**	**CO3**
Q 5	Describe a class template and a function template.	**4**	**CO4**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Explain call by value and call by reference by giving a suitable example.	**10**	**CO1**
Q 7	Describe the concept of constructors and destructors with the help of a suitable programming example.	**10**	**CO3**
Q 8	Write a C++ Program for exception handling using multiple catch statement.	**10**	**CO4**
Q 9	Explain the following with the help of a C++ program a) Friend class b) Static Functions OR Write a C++ program to write a class name "person" with data members: i) *"id"* of type integer and ii) "*name*" of type character array of size 30. Write member functions: i) "*set_details()*" to fill the data members and ii) "*get_details()*" to print the data members. Implement	**10**	**CO2**

	these member functions and invoke these functions from the main() function using the concept of classes and objects.		
SECTION-C (2Qx20M=40 Marks)			
Q 10	a) Describe the term inheritance briefly. Explain with suitable C++ examples the use of protected access specifier. b) Explain single, multilevel, and multiple inheritance with suitable examples in C++. c) Write a C++ program to demonstrate the concept of function overloading.	**6+9+5**	**CO3**
Q 11	a) What is the application of the scope resolution operator in C++? b) Write a program to get two numbers from a user and compute their sum and if the sum is greater than 100 then pass the value to another function to check whether the sum is odd or even (Using classes and functions). c) Write a C++ program by using classes in which user enter the number, program will reverse the number. After reversing the number, show the sum of all numbers. For example, if the number is 153, the after reverse it will be 351 and the sum will be 9. **OR** a) Write a C++ program to display the area of a rectangle by using a class named **'Rectangle'** with one **public** member function named as '*Calculate_Area()*' returns the area of the rectangle. The **private** data members are '*length*' and '*width*'. Also, write a global function named as '*dimension()*' that will be friend to the **'Rectangle'** class. This function will initialize the '*length*' and '*width*' of the rectangle which is input from the user. In main() create an object of the class **'Rectangle'**, then assign '*length*' and '*width*' to that object using the global friend function '*dimension()*'. Display the area by calling the corresponding member function '*Calculate_Area()*' of that object. (You can use reference variables to solve this). b) Explain the term access specifiers in C++ with the help of suitable C++ programs.	**4+8+8** **14+6**	**CO4**