U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

April 2024 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 23IS3PCOOP **Max Marks: 100**
Course: Object Oriented Programming Using C++

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Elucidate the structure of C++ program with an example. Illustrate the benefits of OOP.			**08**
	b)	Create a Class Employee with member variables Id, Name and Location. Write member functions to read and display the data. Write a main function to create ten objects of the Employee class. Define member functions outside the class.	*CO1*	*PO1*	**06**
	c)	Write a program to illustrate call by value, call by address and call by reference in C++.	*CO1*	*PO1*	**06**
		UNIT - II			
2	a)	Write a program to add two data members of different classes using friend function. How are friend functions different from member functions?	*CO2*	*PO2*	**07**
	b)	Write a C++ program, create class Matrix with member variables mat[10][10], row, column and member functions read_matrix(), print_matrix() and add(). Define all functions outside the class. The prototype of add() function is: **void add(Matrix m1,Matrix m2);** Illustrate the addition of two Matrices in the program.	*CO1*	*PO1*	**08**
	c)	Illustrate the benefits of destructors.			**05**
		OR			
3	a)	Why is function overloading in C++ is used? Develop a C++ program to compute the area of circle, rectangle and triangle by overloading the area () function.	*CO3*	*PO3*	**06**
	b)	Write a C++ program to demonstrate default, parameterized and copy constructor.	*CO1*	*PO1*	**10**
	c)	Illustrate the concept of this pointer using a program.	*CO1*	*PO1*	**04**

			UNIT - III			
	4	a)	Develop a program to overload pre-increment and post-increment operator.	*CO3*	*PO3*	**06**
		b)	Create a class Space with 2 coordinates as member variables, write appropriate methods to read and display. Write a friend function to negate the values by overloading unary - operator.	*CO1*	*PO1*	**06**
		c)	What are the different forms of inheritance? Give an example for each.			**08**
			OR			
	5	a)	List any five rules to be followed while overloading the operators.			**05**
		b)	Develop a program to add two complex number by overloading + operator	*CO3*	*PO3*	**07**
		c)	Create a class named Fruit with a data member to calculate the number of fruits in a basket. Create two other class named Apples and Mangoes derived from class Fruit to calculate the number of apples and mangoes in the basket. Print the number of fruits of each type and the total number of fruits in the basket.	*CO3*	*PO3*	**08**
			UNIT - IV			
	6	a)	What are the characteristics of Abstract Class? Why can't we create Object of Abstract Class?	*CO2*	*PO2*	**06**
		b)	Write a program to illustrate the pointer to derived class in C++ with reference to runtime polymorphism.	*CO2*	*PO2*	**07**
		c)	Develop a C++ program to perform the following modes of file operations: i)ios::in ii) ios::out iii) ios::app	*CO3*	*PO3*	**07**
			UNIT - V			
	7	a)	Write a program using function template to sort an array elements of numbers for integer array elements and floating-point array elements.	*CO3*	*PO3*	**07**
		b)	What is Exception Handling Mechanism? Give an example for handling exception caused by division by zero.	*CO1*	*PO1*	**06**
		c)	Develop a class template that demonstrates two generic data types being passed for the class template.	*CO3*	*PO3*	**07**

****