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

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Electronics and Telecommunication Engineering **Duration: 3 hrs.**
Course Code: 22ET5PE1DS **Max Marks: 100**
Course: C++ and Data Structures

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)	State the difference between C and C++	CO1		**05**
	b)	What are unary operators? Briefly explain them	CO1		**05**
	c)	Explain the basic concepts of object oriented programming in detail with example.	CO1		**10**
		OR			
2	a)	Write a C++ code to demonstrate the use of following (i) Inline function (ii) Friend function	CO2	PO1	**10**
	b)	What is data hiding? Explain with the help of a suitable block diagram. Write a C++ code to demonstrate how to create a class and an object.	CO1		**10**
		UNIT - II			
3	a)	List some of the special properties of constructor function	CO2	PO1	**05**
	b)	What is the difference between a pre-increment and post-increment operator	CO2	PO1	**05**
	c)	What is overloading? Explain about the Function overloading and Operator overloading	CO2	PO1	**10**
		OR			
4	a)	Write a C++ code to add two complex numbers with the help of constructors with no argument, with one argument and with two arguments.	CO2	PO1	**10**
	b)	Write a C++ code to demonstrate the concept of following (i) Unary operator overloading (ii) Binary operator overloading	CO2	PO1	**10**
		UNIT - III			
5	a)	What is mean by Catching all the exceptions in C++, explain with example	CO3	PO2	**10**

		b)	What is inheritance? Explain multiple inheritances with suitable c++ coding.	*CO3*	*PO2*	**10**
			OR			
	6	a)	Draw the block diagram representations of different types of inheritance and explain in brief.	*CO1*		**10**
		b)	Write a C++ code to demonstrate the following concepts (i) Virtual base (ii) Virtual function	*CO2*	*PO1*	**10**
			UNIT - IV			
	7	a)	Define queue. Implement the operations of queue using arrays.	*CO4*	*PO3*	**10**
		b)	Write a C++ program to implement single linked list operations	*CO4*	*PO3*	**10**
			OR			
	8	a)	Implement a stack using a linked list in C++.	*CO2*	*PO1*	**10**
		b)	Define Binary tree? With suitable example explain about the binary tree traversal orders	*CO5*	*PO5*	**10**
			UNIT - V			
	9	a)	Describe the tower of Hanoi with an example.	*CO1*		**10**
		b)	Develop heap sort algorithm for 56, 44, 22, 66, 23, 14, 78, 35	*CO2*	*PO1*	**10**
			OR			
	10	a)	Write an algorithm for parenthesis matching in C++	*CO2*	*PO1*	**10**
		b)	Describe bin sort using an example.	*CO2*	*PO1*	**10**

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