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

Autonomous Institute Affiliated to VTU

July 2024 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Medical Electronics Engineering **Duration: 3 hrs.**
Course Code: 22MD5PCDSA **Max Marks: 100**
Course: Data Structures and Algorithms

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

<div style="writing-mode: vertical">**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.</div>

			UNIT - I	*CO*	*PO*	**Marks**
1	a)		With an example, explain in brief the concepts of OOPs.	*CO1*	*PO1*	**10**
	b)		Discuss the data types of C++.	*CO1*	*PO1*	**05**
	c)		Write a C++ program that illustrates the use of inline function.	*CO1*	*PO1*	**05**
			OR			
2	a)		What are classes? Create a class with the following data members? Name of the class: student, Data members: name, roll number, branch and college name, Member functions: putdata() and getdata() to set and display student details respectively.	*CO1*	*PO1*	**10**
	b)		Write a C++ program that illustrates the use of object arrays.	*CO1*	*PO1*	**10**
			UNIT - II			
3	a)		Explain constructors and destructors. Give an example for overloaded constructor.	*CO1*	*PO1*	**10**
	b)		Elaborate on operator overloading. Write the syntax for operator overloading.	*CO1*	*PO1*	**04**
	c)		Write a C++ program to overload a unary minus operator.	*CO1*	*PO1*	**06**
			OR			
4	a)		Define inheritance and discuss different levels of inheritance.	*CO1*	*PO1*	**10**
	b)		What is multi-level inheritance? Explain with an example, show how it can be implemented in C++.	*CO1*	*PO1*	**10**
			UNIT - III			
5	a)		Define data structure. Explain in detail the classification of data structure.	*CO2*	*PO2*	**10**
	b)		Write an algorithm to implement quick sort with suitable example	*CO2*	*PO2*	**10**

			UNIT - IV			
	6	a)	What is stack? Explain different operations performed on stack.	CO3	PO2	**10**
		b)	With an example, illustrate the working of Circular queue.	CO3	PO2	**10**
			UNIT - V			
	7	a)	Briefly explain Big-Oh and Omega notations of Asymptotic data algorithm.	CO4, 5	PO12	**10**
		b)	With an example explain the working of Non recursive algorithm for mathematical analysis.	CO4, 5	PO12	**10**

******