CBCS SCHEME

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BBCA204

Second Semester BCA Degree Examination, Dec.2025/Jan.2026

Fundamentals of Data Structure

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain the concept of recursion with an example to compute the Greatest Common Divisor (GCD) of two numbers.	10	L3	CO1
	b.	Compare and contrast static memory allocation and dynamic memory allocation with an example program.	10	L3	CO1
		OR			
Q.2	a.	Describe, the Tower of Hanoi problem and explain the recursive solution by taking 3 disks.	10	L3	CO1
	b.	Explain the basic operations performed on arrays with suitable example program.	10	L3	CO1
		Module – 2			
Q.3	a.	Discuss the step – by step process of quick sort algorithm with an example.	10	L2	CO2
	b.	Compare Linear Search and Binary Search techniques with neat example.	10	L2	CO2
		OR			
Q.4	a.	Discuss the algorithm for inserting an element and deleting the element of a array and write program for same.	10	L3	CO2
	b.	Write the steps for sorting the Elements INSERTION.	10	L3	CO2
		Module – 3			
Q.5	a.	Develop a C program to convert the infix expression to postfix expression using stack.	10	L3	CO3
	b.	Describe the steps involved in inserting and deleting elements from circular queue.	10	L2	CO3
		OR			
Q.6	a.	Develop a program to perform enqueue and dequeue operations in a circular queue.	10	L3	CO3
	b.	Compare and contrast stack and queue with an example.	10	L2	CO3

		Module – 4			
Q.7	**a.**	Discuss the advantages of using circular linked list over singly linked list with an example.	**10**	**L2**	**CO4**
	b.	Explain the process of searching a linked list with an example program and describe its importance.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Explain how memory is managed during insertion and deletion in linked lists.	**10**	**L2**	**CO4**
	b.	Describe insertion at beginning, and to a given position in end of a singly linked list with an example.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Compare and contrast complete binary tree and strict binary tree with an example.	**10**	**L2**	**CO5**
	b.	Explain the array representation of Binary Search Tree (BST) with an example program.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Describe the concept of Heap tree with an example.	**10**	**L3**	**CO5**
	b.	Construct a Binary Search Tree using following elements. [25, 40, 35, 20, 10, 30, 50]	**10**	**L3**	**CO5**

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