CBCS SCHEME - Summer Semester

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BBCA204

Second Semester BCA Degree Examination, June/July 2025
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
1	a.	Define Data Structure. List and explain data structure operations.	7	L1	CO1
	b.	Explain dynamic memory allocation functions with examples.	7	L1	CO1
	c.	What is Algorithmetic Specification?	6	L1	CO1
		OR			
2	a.	Explain the Recursion Techniques.	7	L1	CO1
	b.	Compare and explain the below terms: i) Iterative functions ii) Recursive function.	6	L1	CO1
	c.	Write a C program to explain the tower of Hanoi.	7	L1	CO1
		Module – 2			
3	a.	What is an array? Explain the declaration and initialization of one and 2 dimensional arrays with example.	7	L1	CO2
	b.	Explain the representation of linear array.	7	L1	CO2
	c.	Briefly explain the operators on array.	6	L1	CO2
		OR			
4	a.	What is selection sort explain with 'C' program?	7	L1	CO2
	b.	Differentiate between sequential search and binary search.	7	L1	CO2
	c.	Explain below term with suitable example : i) Searching ii) Sorting.	6	L2	CO2
		Module – 3			
5	a.	What is Doubly Ended Queue? Write an algorithm to insert an element at rear end of the queue.	7	L1	CO3
	b.	What is Queue? Explain its underflow and overflow condition with algorithm.	7	L1	CO3

	c.	Write the difference between stack and queue.	6	L2	CO3
		OR			
6	a.	What is Queue? Mention its operations.	7	L1	CO3
	b.	How to perform insertion and deletion in operations in a queue, explain with program.	7	L1	CO3
	c.	Write an algorithm to evaluate postfix expressions.	6	L1	CO3
		Module – 4			
7	a.	Explain the node structure of doubly linked list with suitable algorithm.	7	L1	CO4
	b.	Write an algorithm to search an end node in doubly linked list.	7	L1	CO4
	c.	Mention the advantages of linked list.	6	L1	CO4
		OR			
8	a.	Differentiate between singly and doubly linked list with algorithm.	7	L1	CO4
	b.	Write 'C' program to implement operations on singly linked list.	7	L1	CO4
	c.	What is linked list? Explain its types.	6	L1	CO4
		Module – 5			
9	a.	What is tree explain its terminologies?	7	L1	CO4
	b.	Write 'C' program which explain all the traversal implementation of the tree.	7	L1	CO4
	c.	What is Binary tree? Differentiate the techniques used in tree data structure.	6	L1	CO4
		OR			
10	a.	Explain the depth-first search algorithm.	7	L1	CO4
	b.	Mention the different ways of tree traversal in BST.	7	L1	CO4
	c.	List out operations performed in binary tree.	6	L1	CO4

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