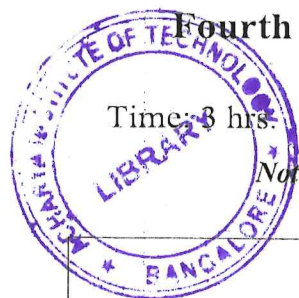


CBCS SCHEME

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BEC405D



Fourth Semester B.E./B.Tech. Degree Examination, June/July 2026

Data Structures using C

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.	What is an Array? Explain different types of arrays.	06	L2	CO1
	b.	Differentiate between structures and unions with an example.	08	L2	CO1
	c.	Define data structure. Explain the classification of data structures.	06	L2	CO1
OR					
Q.2	a.	Discuss the dynamic memory allocation functions with examples.	10	L2	CO1
	b.	Write a C program to demonstrate the basic operations on arrays.	10	L2	CO1
Module – 2					
Q.3	a.	Write a C function for PUSH(), POP() and display of stack.	07	L3	CO2
	b.	Write an algorithm to evaluate postfix expression and apply the same for the expression 62/3-42*+.	07	L3	CO2
	c.	What is Recursion? Write a procedure for finding GCD of two numbers.	06	L3	CO2
OR					
Q.4	a.	Define Stack. Write 'C' functions for various stack operations.	10	L2	CO2
	b.	Develop a 'C' recursive program for tower of Hanoi problem, Create it for 3 disk with schematic call tree diagram.	10	L3	CO2
Module – 3					
Q.5	a.	Explain the advantages of double linked list over single linked list with an example.	10	L2	CO3
	b.	Write a 'C' function to implement insertion, deletion and display operations of a Circular Queue.	10	L3	CO3

OR

Q.6	a.	Differentiate between Arrays and Linked list.	06	L2	CO3
	b.	Explain the different types of Linked list with neat diagram.	06	L2	CO3
	c.	Write a C function for the following on single linked list. i) Insert the node at front ii) Delete a node at the front iii) Display	08	L3	CO3

Module – 4

Q.7	a.	Define Binary Tree and Traverse using in order, preorder and post order traversal with an example.	10	L1	CO4
	b.	Define Binary Search Tree. Draw the BST for the given input: 14, 15, 4, 9, 7, 18, 3, 5, 16, 20, 17, 9.	10	L3	CO4

OR

Q.8	a.	Describe the basic searching techniques and Tree searching.	10	L2	CO4
	b.	Explain the construction of Threaded Binary tree for 10, 20, 30, 40, and 50.	06	L2	CO4
	c.	Mention the advantages of the Binary Threaded Tree.	04	L1	CO4

Module – 5

Q.9	a.	Describe Huffman algorithm with example.	10	L2	CO5
	b.	Distinguish the static and dynamic hashing with an examples.	10	L2	CO5

OR

Q.10	a.	Discuss the Prim's algorithm steps with example.	10	L2	CO5
	b.	Illustrate the elementary graph operation in C.	10	L2	CO5
