JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester II) Examination May 2025

Programme:BCA
Course: Data Structure Using C **Full Marks: 70**
Course Code:3CCC103 **Time: 3 Hrs.**
Enrolment no. _____

Q.No.	Questions	CO	Bloom Taxonomy Category	Marks
	Section I			
1	**Short Answer type questions.**			4 x 5 = 20
a	Explain the difference between average case and worst case analysis of an algorithm.	CO1	Understand	
	or			
	Describe Big-O notation and Θ notation with an example	CO1	Understand	
b	Explain overflow and underflow conditions.	CO2	Understand	
	or			
	How array and linked list differ from each other?	CO2	Analyze	
c	Apply an algorithm for inserting data in a linked list.	CO3	Apply	
	or			
	What is tree traversal? List the different types of tree traversals.	CO3	Understand	
d	Define B-trees and explain their importance in database indexing.	CO4	Understand	
	or			
	What are the key properties of B-trees?	CO4	Understand	
	Section II			
	Long Answer type questions.			**3 x 10 = 30**
2	Explain the concept of asymptotic notation. How does it measure algorithm complexity?	CO1	Understand	
	or			
	What is data structure? Explain various types of data structure in detail**.**	CO1	Understand	
3	Construct a Binary Search Tree (BST) by inserting the following elements in the given order and, calculate its height, and determine whether it is balanced or not: 67, 18, 3, 55, 62, 43, 96, 12, 38, 75, 84, 7, 29, 49, 91.	CO3	Create	
	or			
	Explain the different methods of tree traversal with detailed algorithms and examples.	CO3	Understand	
4	Compare binary search trees and B-trees in terms of structure and efficiency.	CO3	Analyze	
	or			
	Discuss the steps involved in inserting a node into a B-tree.	CO3	Understand	
	Section III			
	Application based questions			**1 x 20 = 20**
5	Write an algorithm to insert an element in a queue. Differentiate between queue and circular queue.	CO4	Apply	
	or			
	Evaluate Sorting techniques with its types. Write a c program to implement bubble sort and selection sort and also write time complexity.	CO4	Evaluate	

COURSE OUTCOME

CO1 Learn the basic types for data structure, implementation and application.
CO2 Know the strength and weakness of different data structures.
CO3 Use the appropriate data structure in context of solution of given problem.
CO4 Develop programming skills which require to solve given problem