

QP CODE: D3BCA2402

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Reg. No :

Name :

THIRD SEMESTER FYUGP EXAMINATION, NOVEMBER 2025

Discipline Specific Core (DSC) Courses - Major

BCA3CJ201 : Data Structures Using C

(Credits: 4)

Time: 2 Hours

Maximum Marks: 70

Section A

Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)

1. Write a structure definition for storing student details (roll, name, marks).	BL1	CO1
2. Write the structure of a binary tree node using linked list representation.	BL1	CO3
3. List any three basic terminologies of trees.	BL1	CO3
4. Define selection sort.	BL1	CO4
5. Differentiate between array and linked list implementation of queue.	BL2	CO2, CO6
6. Critically analyze whether arrays are suitable for dynamic memory allocation.	BL3	CO2
7. Explain why merge sort is suitable for external sorting.	BL2	CO4
8. Differentiate between height and depth of a binary tree.	BL2	CO3
9. Explain why collisions occur in hashing.	BL2	CO4
10. Explain the LIFO principle of stack with a simple example.	BL2	CO1

Section B

Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)

11. Write an algorithm to insert a new node after a given node in a singly linked list.	BL2	CO2
12. State the conditions for overflow and underflow in stack using array.	BL1	CO2

(PTO)

13.	Discuss why deletion in a binary tree is more complex than insertion.	BL2	CO3, CO5
14.	State the steps of linear search with an example.	BL1	CO4
15.	Explain the partitioning process in quick sort with an example.	BL2	CO4, CO6
16.	Write short notes on single linked list and its uses.	BL1	CO1
17.	Explain with an example the difference between directed and undirected graphs.	BL2	CO3
18.	Explain with example how adjacency list saves space compared to adjacency matrix.	BL2	CO5

Section C

Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)

19.	Explain in detail the classification of data structures with neat diagrams.	BL1	CO1
20.	Define queue and explain types of queue in detail.	BL2	CO1

CO : Course Outcome

BL : Bloom's Taxonomy Levels (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)