

**S. Y. B. C. A.
BCA -201 Data And File Structure**

Teaching Scheme (per week)		Examination Scheme					
Th. (hours)	Pr. (hours)	Internal		External		Total	
		Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
3	-	30	-	70	-	100	-

UNIT 1: Introduction to Data Structure. [Marks 08]

- Data Structure [04]
 - o Primitive and Non-Primitive Data Structure
 - o Linear and Non-Linear Data Structure
 - o Time and Space efficiency of the Algorithm
- String Manipulation – String Length, String copy, [04]
String Compare, String Concatenation, Find

UNIT 2: Linear Data Structures [Marks 22]

- Arrays
- Stacks
- Queue
- Singly Linked List
- Circular Linked List
- Doubly Linked List
- Applications of Linked List
- Reverse a List
- Merge a List
- Concept of Multi linked Structure

UNIT 3 Non linear Data Structures [Marks 20]

- Tree Structure
- General Tree
- Binary Tree
- Tree Traversal Algorithms
- Copy, Insert & Delete Algorithms
- Threaded Tree (Excluding Algorithms)
- B-Tree and B+ Tree (Excluding Algorithms)
- AVL Tree (Excluding Algorithms)
- Height Balanced Tree (Excluding Algorithms)
- Weight Balanced Tree (Excluding Algorithms)
- Graph and Networks
 - o Concept
 - o BFS Algorithm
 - o DFS Algorithm

UNIT 4 Sorting, Searching and File Structure [Marks 20]

- Sorting [10]
 - o Selection, Bubble, Insertion, Shell, Quick, Radix
- Searching [03]

- o Sequential and Binary Search, BST
- File Organization [07]
- o Introduction
- o Sequential, Index, Direct, Inverted Organizations and their applications
- o Hashing Function and Collision Processing

Main Reference Books:

1. Tremblay J. and Sorenson P. : An Introduction to Data Structure with Applications 2nd Edition, McGraw-Hill international Edition, 1087.

[Topic Covered:

0.3, 3.2, 3.4, 3.5.1, 3.5.2.1, 3.5.2.2, 3.6, 3.8,
4.1, 4.2, 4.3.1,
5.1.1, 5.1.2, 5.1.3, 5.2.1, 5.3.1, 5.4.1, 5.4.4, 5.4.5,
6.1.1, 6.1.2, 6.1.3, 6.1.6, 6.1.7, 6.1.9, 6.2.1, 6.2.2, 6.2.3.1, 6.2.3.2,
6.2.3.3, 6.2.4.2, 6.2.4.3,
7.4.1, 7.4.2, 7.7.1, 7.7.2, 7.9.1, 7.9.2, 7.13.2]

2. Bhagat singh and Thomas Naps: Introduction to Data Structure, Tata McGraw-Hill Publishing Co. Ltd., 1985.

Question Paper Scheme:

University Examination Duration : 3 Hours.

- Q.1 - Unit-I (08 Marks)
- A. Objective/ Short Questions.
 - B. Descriptive/ Long questions.
- Q.2 - Unit-II (22 Marks)
- A. Objective/ Short Questions.
 - B. Descriptive/ Long questions (With Algorithm)
- Q.3 - Unit-III (20 Marks)
- A. Objective/ Short Questions.
 - B. Descriptive/ Long questions (With Algorithm if necessary)
- Q.4 - Unit-IV (20 Marks)
- A. Objective/ Short Questions.
 - B. Descriptive/ Long questions (With Algorithm)

- Note:
1. Options should be given in all questions.
 2. Instead of program, algorithm should be asked in the question paper.