GUJARAT UNIVERSITY
BCA III SYLLABUS

COURSE TITLE	**Data Structures Practicals**
COURSE CODE	**CC-206**
COURSE CREDIT	**3**
Session Per Week	**3**
Total Teaching Hours	**40 HOURS**

AIM

Student will be provided with practical knowledge of basic data structures, representation, building and use of various data structures in different applications in real world.

LEARNING OUTCOMES

1.) To gain the knowledge of various advanced data structure topics practically.
2.) To develop skills for effective use of the pointers and structures in programming.

Note

The students are expected to write program in "C or C++ Programming "languages unit wise as given below. The list in each unit is indicative only and **may or may not be asked in the examination.** The programs given below are only sample example for practice in lab.

DETAIL SYLLABUS

UNIT	TOPIC / SUB TOPIC	TEACHING HOURS
1	**Linked List** 1. Write program to implement following operations using Singly link list • Insert at first • Insert at Last • Insert at specified location (Before or After the Node) • Delete from first • Delete from last • Delete any specified node • Traversal • Sorting • Splitting • Merging • Counting Operations(Total no. of nodes, even and odd no. of nodes)	**10** **4**

1	2. Write program to implement following operations using Doubly link list • Insert at first • Insert at Last • Insert at specified location (Before or After the Node) • Delete from first • Delete from last • Delete any specified node • Traversal • Sorting • Splitting • Merging • Counting Operations(Total no. of nodes, even and odd no. of nodes)	**6**
2	**Searchin and Sorting**	**10**
	1. Write a program to implement sequential search. 2. Write a program to implement binary search.	**2**
	3. Write a program to implement bubble sort. 4. Write a program to implement selection sort 5. Write a program to implement merge sort 6. Write a program to implement quick sort 7. Write a program to implement insertion sort.	**8**
3	**Stack**	**10**
	• Stack: 1. Write a program to implement following operations in stack Using array and Linked List. • PUSH • POP • PEEP 2. Write a program to implement Evaluation of given postfix expression.	**5**
	3. Write a program to implement conversion of infix expression into postfix expression (parentheses and non parentheses). 4. Write a program to implement recursion. 5. Write a program to reverse the string using the stack.	**5**
4	**Queue and Tree**	**10**
	Queue: 1. Write a program to implement Simple Queue operations using Array and Linked List. • ENQUEUE • DEQUEUE • Traversal (display) 2. Write a program to implement Circular Queue operations Using Array. • ENQUEUE • DQUEUE • Traversal (display)	**5**

4	3. Write a program to implement following operations on Binary Search Tree using Linked List. • Creation • Insertion • Traversal(In-order, Pre-order, Post-order)	**5**

TEXT BOOK:

Data and File Structures using C Publisher: Oxford
By Reema Thareja

REFERENCE BOOKS:

1. Data Structures and Algorithms in C++ Publisher: Dreamtech
By B. M. Harvani
2. Magnifying Data Structures Publisher: PHI
By: Arpita Gopal
3. Data Structures using C & C ++ Publisher: Wiley-India
By : Rajesh K. Shukla
4. Introduction to Data Structures in C Publisher: Pearson Education
By: Ashok N. Kamthane
5. Data Structures Using C Publisher: Pearson Education By : A. K Sharma

REQUIRED SOFTWARE/S

Turbo c