UNIT - 1	
Part – A (Short Answer Questions)	
1	**Define** the term algorithm and state the criteria the algorithm should satisfy.
2	**Define** recursive algorithm
3	**Differentiate** between recursive and iterative algorithms
4	**Define** asymptotic notations: big 'Oh', omega and theta?
5	**Describe** best case, average case and worst case efficiency of an algorithm?
6	**How** do you measure the algorithm running time?
7	**Describe** the role of space complexity and time complexity in measuring the performance of a program.
8	**Define** data structure .
9	**List** linear and nonlinear data structures.
10	**List** the operations performed in the Linear Data Structure.
11	**List out any four applications of data structures?**
12	**Define Linked List.**
13	**State the different types of linked lists.**
14	**List the basic operations carried out in a linked list.**
15	**List the advantages and disadvantages of linked list.**
16	**Define Sparse Matrix and its Representation with example.**
17	**Define Doubly Linked List.**
18	**List areas where data structures can be applied.**
19	**Define Circular Linked List.**
Part - B (Long Answer Questions)	
1	**Discuss** various the asymptotic notations used for best case average case and worst case analysis of algorithms.
2	**Explain** Performance Analysis in Detail.
3	**Define** recursion. Explain with it Fibonacci series and factorial of a number.
4	**Explain** time and space complexities in detail
5	**Explain** the different operations on singly liked list
6	**Explain** concatenation of singly linked lists
7	**Explain** circular linked list operations
8	**Explain** doubly linked list operations
9	**List** the advantages and disadvantages of doubly linked list over singly linked list?
10	**Explain** the applications of doubly linked lists
11	**Explain** the following operations in a doubly linked list.
	(i) Insert an element
	(ii) Delete an element
	(iii) Reverse the list
12	**Write** an algorithm to insert and delete a key in a circular queue

13	**Explain** Array and Linked representation of Sparse Matrix
14	**Write** a program to insert an element in between two nodes in a double linked list
15	**Explain** how to create circular linked list and insert nodes at end
	Part – C (Problem Solving and Critical Thinking)
1	F(n)=3n2-n+4 show that f(n)=O(n2)
2	F(n)=5n2+10n convert this to Ω() notation
3	F(n)=√n and g(n)=log n , show that f(n)+g(n)=O(√n)
4	List out few of the applications that make use of Multilinked Structures?
5	Write a C program that uses functions to perform the following:
	a) Create a singly linked list of integers.
	b) Delete a given integer from the above linked list.
	c) Display the contents of the above list after deletion.
6	Write a C program that uses functions to perform the following:
	a) Create a doubly linked list of integers.
	b) Delete a given integer from the above doubly linked list.
	c) Display the contents of the above list after deletion.
7	Given a Singly linked list with each node containing either 0, 1 or 2. Write code to sort the list. Input: 1 -> 1 -> 2 -> 0 -> 2 -> 0 -> 1 -> 0
	Output: 0 -> 0 -> 0 ->1 -> 1 -> 1 -> 2 -> 2
8	Given a linked list and two integers M and N. Traverse the linked list such that you retain M nodes then delete next N nodes, continue the same until end of the linked list. Input: M = 2, N = 2 Linked List: 1->2->3->4->5->6->7->8 Output: Linked List: 1->2->5->6 The main part of the problem is …
9	Given two linked lists in a way such that the resultant must contain the elements alternatively from one list to other list.
	Input : LL1:1->2->3->4
	LL2: 5-> 6->7
	Output: 1->5->2->6->3->7->4
10	Write a program to remove duplicate vales from a double linked list