SUB: DATA STRUCTURE USING C LANGUAGE   **MARKS**: 70

Q.1 A	**Attempt the following**	**4 Marks**
1)	Two main measures of the efficiency of an algorithm are _____.	
2)	What is the proper keyword to deallocate memory?	
3)	Malloc function returns _____ type of pointer.	
4)	List out two methods of Graph traversal.	
Q.1 B	**Answer in brief (Any 1 out of 2)**	**2 Marks**
1)	Differentiate malloc and calloc function.	
2)	Explain Big-Oh Notation.	
Q.1 C	**Answer in detail (Any 1 out of 2)**	**3 Marks**
1)	Write a note on dangling pointer problem.	
2)	Explain Big-Omega Notation.	
Q.1 D	**Write a note on (Any 1 out of 2)**	**5 Marks**
1)	Write a note on Adjacency matrix and adjacency lists.	
2)	Write a note on minimal spanning tree.	
Q.2 A	**Attempt the following**	**4 Marks**
1)	Quick sort uses _____ for implementation.	
2)	_____ is a searching technique applicable on files that are too large.	
3)	Merge sorting uses _____ mechanism for sorting.	
4)	_____ is very simple and efficient algorithm for the smallest lists.	
Q.2 B	**Answer in brief (Any 1 out of 2)**	**2 Marks**
1)	Write a note on index searching.	
2)	Write a note on sequential searching.	
Q.2 C	**Answer in detail (Any 1 out of 2)**	**3 Marks**
1)	Write an algorithm to implement bubble sort.	
2)	Write an algorithm to implement merge sort.	
Q.2 D	**Write a note on (Any 1 out of 2)**	**5 Marks**
1)	Write a C program to implement selection sort.	
2)	Write a C program to implement quick sort.	
Q.3 A	**Attempt the following**	**4 Marks**
1)	_____ is the mechanism used by stack to add and remove nodes from stack.	
2)	New elements are added to the _____ end of the queue.	
3)	In stack we can access elements from both ends. (True/False)	
4)	Queue follows _____ mechanism to store the data.	
Q.3 B	**Answer in brief (Any 1 out of 2)**	**2 Marks**
1)	Write down applications of stack and queue.	
2)	Differentiate stack and queue.	
Q.3 C	**Answer in detail (Any 1 out of 2)**	**3 Marks**
1)	Write a note on deque. (No need to write code. Explain it by drawing double ended queue.)	
2)	Write a note on circular queue. (No need to write code. Explain it by drawing circular queue.)	
Q.3 D	**Write a note on (Any 1 out of 2)**	**5 Marks**
1)	Write an algorithm to push and pop elements from stack.	
2)	Write a C program to implement simple queue with all possible operations of it.	
Q.4 A	**Attempt the following**	**4 Marks**
1)	In singly linked list last node address part will contain _____.	
2)	First node is pointed by _____ pointer in linked list.	
3)	Traversal is compulsory to insert the node at the _____ position as well as at the ____ position in LL.	
4)	In circular singly linked list last node address part will contain _____.	
Q.4 B	**Answer in brief (Any 1 out of 2)**	**2 Marks**
1)	Differentiate Singly and Doubly Linked List.	
2)	Write down applications of the linked list.	
Q.4 C	**Answer in detail (Any 1 out of 2)**	**3 Marks**
1)	Write an algorithm to insert new node in the beginning of the singly linked list.	
2)	Write an algorithm to delete last node from singly linked list.	
Q.4 D	**Write a note on (Any 1 out of 2)**	**5 Marks**
1)	Write a C function (UDF) to insert new node in the middle of the singly linked list.	
2)	Write a C function (UDF) to delete a node from the beginning in singly linked list.	

Q.5 A   **Attempt the following**   **4 Marks**

1)   Left->Node->Right is the order of traversal in _____ method of tree traversal.

2)   In tree ____ node has no children.

3)   The _____ node of a tree is the node with no parents.

4)   Node->Left->Right is the order of traversal in _____ method of tree traversal.

Q.5 B   **Answer in brief (Any 1 out of 2)**   **2 Marks**

1)   Write down properties of tree.

2)   List out and explain objectives of tree.

Q.5 C   **Answer in detail (Any 1 out of 2)**   **3 Marks**

1)   Write down properties of binary tree.

2)   Write a note on post order traversal of binary tree.

Q.5 D   **Write a note on (Any 1 out of 2)**   **5 Marks**

1)   Write a note on in order traversal of binary tree.

2)   Write a note on height balanced tree.