# B.Tech( III Sem )
# Term Work - Data structure using 'c' –language

**Date of Submission: 2-12-2023**

**INSTRUCTIONS:**

**1.The programs should have source code and its output separately, print outs should be on DMP sheets.**
**2. Programs in the file should be numbered as given in the term work.**
**3. All programs should be menu driven**
**4. Thick chart paper (green for UG courses)**
**binding for the file is required.**
**5. The file should have 4 pages initially in black and white in the given order**
**a. front page-In Submitted To ..**
**b. certificate**
**c. Acknowledgement**
**d. Index**
**6. Use A4 size bond paper for algorithm.**
**7. Do not use global pointers/variables.**

Q1. Write a C program to Insert and Delete elements form a Queue using link list ,each node should have the following inforamaion about a product Product_Id(char) , Product_Name(string) , Total_sale(integer),Product_Grade(Char)

Q2. Let A and B be two structures of type Linked List. Write a 'C ' program to create a new Linked List 'S' that contains elements alternately from A and B beginning with the first element of A. If you run out of elements in one of the lists, then append the remaining

Q3.Write a C program to create a single linked list then input a value V, partition it such that all nodes less than V come before nodes greater than or equal to V.

Q4. Write a C program to create two single linked lists, and then write another function to subtract two numbers represented as linked list.
List1->; 8->9->7->NULL (First Number: 897)
List2->: 1->4->5->NULL (Second Number: 145)
Output->:752

Q5. Write a C program to craeate a single linked list , like L0 -> L1 -> … -> Ln-1 -> Ln. Write another C fucntion to rearrange the nodes in the list so that the new formed list is : L0 -> Ln -> L1 -> Ln-1 -> L2 -> Ln-2 .You are required to do this in place without altering the nodes' values.

Q6. Write a C program to create two link lists positive and negative from Original linked list, so that positive linked list contains all positive elements and negative linked list contains negative elements. Positive and negative linked lists should use the node of existing original linked list.

Q7. W.A.P. to create a binary search tree and perform following operations:

1) Search a particular key.
2) Delete a node from the tree.
3) Find total number of leaf nodes
4) Find height of a binary search tree
5) Count total numbers of nodes from right hand side of root node
6) $K^{th}$ largest element without doing any modification in Binary Search Tree.

Q8. Write a program to add of two polynomials of degree n, using linked list

For example $p1=a_nx^n+a_{n-1}x^{n-1} + a_{n-2}x^{n-2} + \ldots\ldots a^0x^0$
$P2=b_nx^n+b_{n-1}x^{n-1} + b_{n-2}x^{n-2} + \ldots\ldots b^0x^0$

p1 = first polynomial

p2 = second polynomial

Find out $p3= p1+p2$

Q9. Write a C program to sort a sequence of characters given by user in an array, using Quick sort technique.

Q10. Using circular linked list allocate time slots of 10ms for given processes in time sharing Environment and then print which process will be completed in how much time.

Q11. Write a C program to store the details of a directed weighted graph (Use array of pointers concept).

Q12. Write a C program to implement BFS.