MODULE-3 Question Bank

1. Write the following algorithms for singly linked list: (Jan 2019)
    a. Inserting ITEM as the first node in the list
    b. Deleting the node with the given ITEM of information
2. Write the node structure for linked representation of polynomial. write the function to add two polynomials represented using linked list(Jan 2019)
3. Write the function to perform the following: (Jan 2019)
    a. Inverting a singly linked list
    b. Concatenating the singly linked list
    c. Finding the length of the circular list
4. Write a note on header linked list Explain the widely used header list with diagram (Jan 2019)
5. For a given sparse matrix write the diagrammatic linked list representation (Jan 2019)

$$A = \begin{bmatrix} 0 & 10 & 0 & 0 \\ 3 & 0 & 0 & 5 \\ 8 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 8 & 0 \end{bmatrix}.$$

6. Write the following functions for single linked list: i) Reverse the list ii) concatenate two list (Jan 2018)
7. Write the functions insert_front and delete_front using doubly linked list (Jan 2018)
8. Write an algorithm to add two polynomials (Jan 2018)
9. Define sparse matrix, Give sparse matrix representation of linked list for a given matrix (Jan 2018)

$$A = \begin{bmatrix} 0 & 0 & 4 & 0 & 0 \\ 6 & 5 & 0 & 0 & 0 \\ 0 & 3 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 2 \end{bmatrix}$$

10. Give a node structure to create a singly linked list of integers and write functions to perform the following: (Jan 2017)
    a. Create list
    b. Assume the list contains 3 nodes with data 10,20,30. Insert node with data 40 at the end of the list
    c. Insert a node with data 50 between the nodes having data values 10 and 20
11. What is the advantage of doubly linked list over singly linked list? illustrate with an example (Jan 2017)
12. For a given sparse matrix write the diagrammatic linked list representation (Jan 2017)
13. Write the function for singly linked list with integer data to search an element in the first (Jan 2017)
14. Write a node structure for linked list representation of polynomial. Explain the algorithm to add two polynomials (Jan 2017)
15. Give the node structure to create a linked list of integers and write C functions to perform the following: (July 2017)
    a. Create three nodes list with data 10,20 and 30.

    b. Insert a node with data value 15 in between the nodes having the data values less than 10 and 20
    c. Delete the node whose data is 20
    d. Display the resulting singly linked list
16. Write a node structure for linked list representation of polynomial? Explain the algorithm to add two polynomials represented using linked list(July 2017)
17. List out the differences between the singly linked list and doubly linked list. Illustrate with example the following operations on a doubly linked list(July 2017)
    a. Inserting a node at the beginning
    b. Inserting at the intermediate position
    c. Deleting of a node with a given value
    d. Search a key element
18. Write a function for singly linked list with integer data to search an element in the list that is unsorted and a list that is sorted (July 2018)
19. Given 2 singly linked list LIST1 and LIST2 write an algorithm to form a new list LIST3 using concatenation of the lists LIST1 and LIST2(July 2018)