REGISTRATION NUMBER

SRINIX COLLEGE OF ENGINEERING

2ND INTERNAL EXAMINATION-2021-22

Subject-**DS**   Semester-**3**rd Branch-**CSE**

Full Mark-**100**   Time-**2.30Hrs**

**PART-ANSWER ALL THE QUESTIONS**   **[2x 10 =20]**

1. What is directed graph?
2. What do mean by non-linear data structure?
3. What do you mean by ADT?
4. What is Priority Queue?
5. What is Binary Search Tree?
6. What is doubly Linked list?
7. What do you mean by acyclic graph?
8. What is AVL tree?
9. What do you mean by primitive data structure?
10. What is De-queue?

PART-B :ANSWER ANY EIGHT QUESTIONS   **[06 X 8 = 48]**

1. Write down the algorithm to insert an element in doubly linked list after a specific node.
2. Write down the algorithm to search an element using binary search.
3. What is Binary tree? Construct a binary tree from given traversal

   In-order: { 4, 2, 1, 7, 5, 8, 3, 6 }

   Pre-order: { 1, 2, 4, 3, 5, 7, 8, 6 }
4. .Write down the algorithm for sorting elements using quick sort.
5. rite down the algorithm for deletion a node from BST.
6. Draw the classification tree of data structure. What is non-primitive data structure?
7. What are the advantages of circular queue over linear queue explain with example.
8. Consider the graph given below, find all possible spanning tree of this graph and also find the minimum spanning tree with respect of weight.
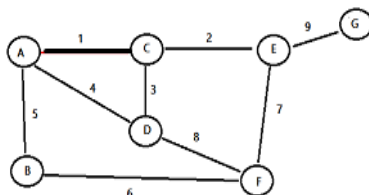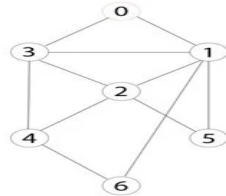
9. Write down the algorithm to insert and delete an element in queue
10. Discuss three types of asymptotic notation with graph representation

PART-C: ANSWER ANY TWO QUESTIONS   **[16X2 = 32]**

1. a)Consider the graph below and visit all nodes by applying BFS and DFS algorithm.

  b) What are the differences between BFS and DFS?
2. a)Construct AVL Tree step by step for the following sequence of numbers-
    50 , 20 , 60 , 10 , 8 , 15 , 32 , 46 , 11 , 48
  b) Construct a B-tree step by step of order 3 by inserting numbers from 1 to 10.
3. a)Write down the algorithm of insertion sort. Discuss the complexity of bubble sort of
    three cases.
  b) i) Arrange the following elements step by step using Merge Sort.
    14,7,3,12,9,11,6,2
    ii) Discuss the complexity of Merge Sort.