1. What is a data structure? What are the types of data structures? What are the notations of measurement of performance of an algorithm?
2. What is Bubble sort? Write an algorithm for sorting an array of N elements using bubble sort. Sort this array using bubble sort – 15, 18, 4, 5, 2
3. What are the types of linked list? Explain with diagram. Write an algorithm to delete element (node) from "pos" position in linked list.
4. Define the properties of complete binary tree. Create a tree from given orders of traversal pre-order = {11, 5, 3, 8, 16, 14, 18, 17, 20} in-order = {3, 5, 8, 11, 14, 16, 17, 18, 20}.
5. Convert this infix equation to postfix using stack – (A+B^D)/(E-F) +G
6. What is the difference between sequential (linear) search and binary search? Show the steps of searching element '5' using binary search technique in this array – 2, 5, 8, 15, 20
7. Explain megre sort using an example.
8. Consider the weighted graph G in Fig. 1. Suppose the nodes are stored in an array DATA as follows: DATA: X, Y, S, T (a) Find the weight matrix W of G. (b) Find the matrix Q of shortest paths using Warshall's Algorithm.

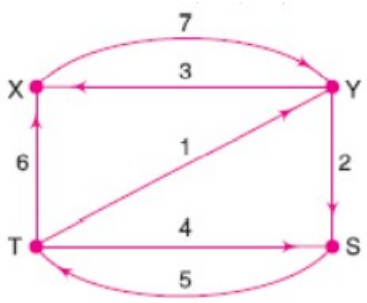

Fig. 1