Seat No.	

[5668]-134

S.E. (E&TC/Electronics) (Sem. I) EXAMINATION, 2019

DATA STRUCTURES AND ALGORITHMS

(2015　PATTERN)

Time : Two Hours　　　　　　　　　　**Maximum Marks : 50**

N.B. :— (*i*)　Neat diagrams must be drawn wherever necessary.

　　　(*ii*)　Figures to the right indicate full marks.

　　　(*iii*)　Assume suitable data, if necessary.

1.　(*a*)　Sort the following data using selection sort :　　　[6]
　　　　　　25, 8, 10, 23, 32, 14, 13.

　　(*b*)　Write 'C' function with and without pointer to arrays to copy one string into another string.　　　[6]

Or

2.　(*a*)　Explain parameter passing by value and parameter passing by reference with suitable example.　　　[6]

　　(*b*)　Write 'C' function for binary search. Discuss its time complexity.　　　[6]

3.　(*a*)　Define Queue. Explain its implementation using any *one* method.　　　[5]

(*b*) Write a function PUSH in 'C' for stack using array. [4]

(*c*) Differentiate singly linked list and doubly linked list. [4]

Or

4. (*a*) Write 'C' function to delete mode from singly linked list. [5]

(*b*) Write a short note on circular linked list. [4]

(*c*) Compare status with queue. [4]

5. (*a*) Construct the Binary Search Tree (BST) from the following elements. Show all steps : [6]

12, 50, 35, 30, 13, 45, 7.

(*b*) Define the following terms with example with respect to Binary Tree : [6]

(*i*) Height of Tree

(*ii*) Strictly Binary Tree

(*iii*) Complete Binary Tree.

Or

6. (*a*) Write 'C' function to insert node in BST (Binary Search Tree). [6]

(*b*) Write inorder, preorder, postorder traversal for the following tree. (Figure 1). [6]
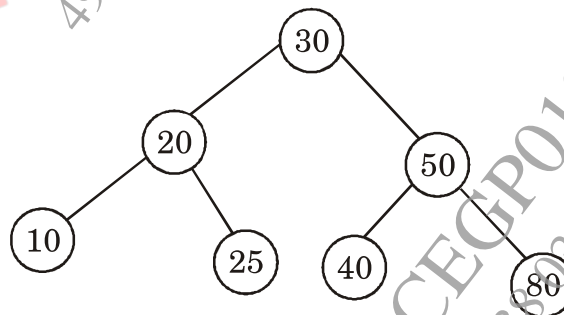

Fig. 1

7. (*a*) What is minimum spanning tree of a graph. Find out the minimum spanning tree of the following graph (Fig. 2) using : [7]

   (*i*) Prim's Algorithm
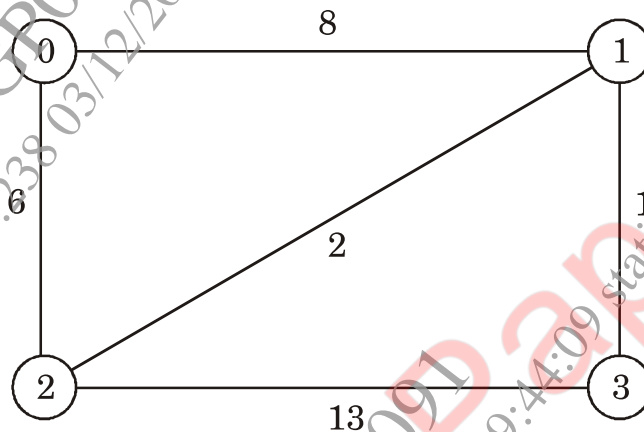
   (*ii*) Kruskal's Algorithm.

Fig. 2

   (*b*) Explain Dijkstra's Algorithm with suitable example. [6]

Or

8. (*a*) Define the term graph. Give adjacency matrix and adjacency list representation of graph shown in Fig. 3. [7]
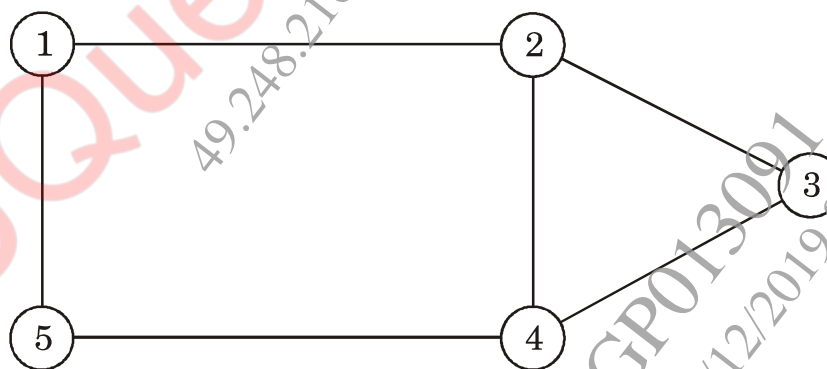

Fig. 3

   (*b*) Explain with suitable example BSF and DSF traversal of graph. [6]