Seat No.	

[5559]-136

S.E. (E & TC/Electronics) (I Sem.) EXAMINATION, 2019
DATA STRUCTURES AND ALGORITHMS
(2015 PATTERN)

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

Instructions to the candidates:
1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 Q.7 or Q.8.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right side indicate full marks.*
4) *Use of Calculator is allowed.*
5) *Assume Suitable data if necessary*

Q1) (a) What is time complexity of algorithm? Write down the time complexity of each searching and sorting algorithm. [6]

(b) What is union? What is difference between Structure and Union [6]

OR

Q2) (a) Explain constants, variable and keyword in C with example. [6]

(b) Sort the following numbers 17, 24, 49, 7, 8, 67, 23 using: [6]
　　　i)　Selection sort
　　　ii)　Bubble sort

Q3) (a) Evaluate the following postfix expression and show stack after each step in tabular form. [7]
　　　Postfix Expression: PQR+*ST/-
　　　Given P=4, Q=7, R=3, S=12, T=4

(b) Write structure for doubly linked list? What is the difference between array and Linked list. [6]

OR

Q4) (a) Write structure for stack using array. Write the PUSH and POP function for stack using array? [7]

(b) Explain different representation methods of polynomial. [6]

P.T.O.

Q5) (a) Define Tree and following terms with respect to tree with example (figure) [6]
1. Root node 2. Siblings 3. Skewed Binary Tree 4. Complete Binary Tree

(b) Draw the binary **search** tree using the following data. Show each steps: [6]
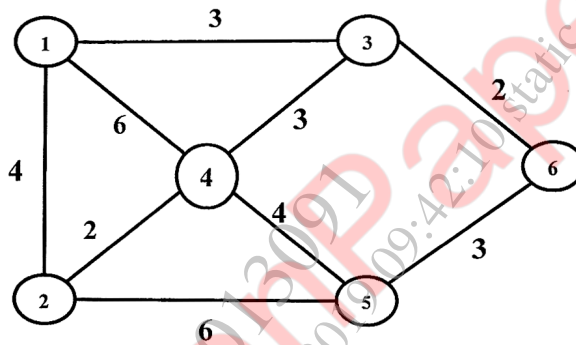40   70   35   20   110   75   25   15   73

OR

Q6) (a) Explain traversing of binary tree? [6]

(b) Explain representation methods of binary tree in memory. [6]

Q7) (a) Explain Kruskal's Algorithm with example and define path and simple path. [7]

(b) Define Spanning Tree. Write BFS and DFS for the graph given in below figure, [6]
starting with vertex 1.

OR

Q8) (a) Define graph? Explain difference between DFS and BFS. [6]

(b) Explain types of graph? Using Prim's algorithm find the minimum spanning tree of [7]
following graph, starting with vertex 1.