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[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

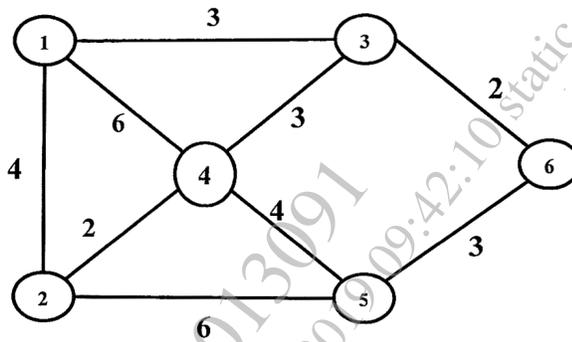
- Q4) (a) Write structure for stack using array. Write the PUSH and POP function for stack using array? [7]
- (b) Explain different representation methods of polynomial. [6]

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, starting with vertex 1. [6]



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 following graph, starting with vertex 1. [7]

