

Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name : Design & Analysis of Algorithms

Subject Code : 5CS01WAA1

Branch: M.Sc.IT (WebTech)

Semester : 1

Date : 14/03/2019

Time : 02:30 To 05:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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SECTION – I

- Q.-1 Define following terms: 7**
- a) Algorithm 1
 - b) Omega Notation . 1
 - c) Greedy Technique. 1
 - d) Best and worst case time complexity. 2
 - e) Characteristics of algorithm. 2
- Q.-2 Attempt following. 14**
- a) Explain quick sort algorithm with example. 5
 - b) Explain analyzing process of algorithm. 5
 - c) Discuss: order of growth. 4

OR

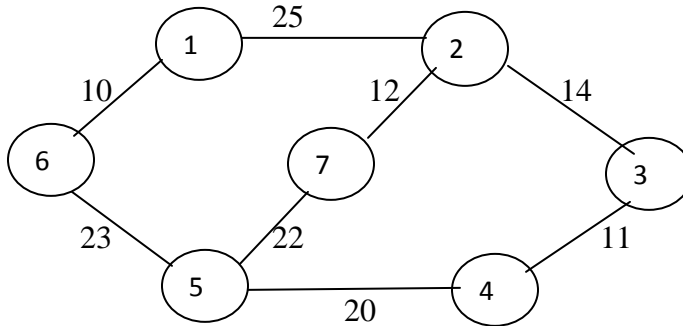
- a) Define Merge sort. Explain its process by algorithm. 5
 - b) Explain design process of algorithm. 5
 - c) Define binary search. Explain Binary search algorithm. 4
- Q.-3 Attempt following. 14**
- a) What is greedy strategy? Explain Minimum Spanning Tree (MST) with example. 5
 - b) Explain Prim's Algorithm. 5
 - c) Define Heap. Explain max/min Heap. 4

OR

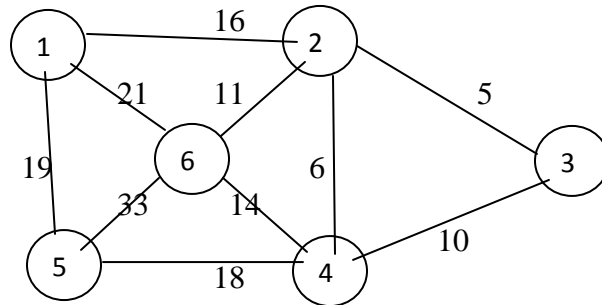
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a) Find minimum spanning tree for following using prim's algorithm. 5



b) Find minimum spanning tree for following using Kruskal's algorithm. 5



c) Explain Dijkstra's algorithm with example. 4

SECTION – II

Q.-4 Define following: 7

- a) Pre order Traversal
- b) Graph
- c) Degree of a node.
- d) Internal node.
- e) Queue
- f) Strongly connected components
- g) Stack

Q.-5 Attempt following. 14

- a) Explain Stack with insert and delete algorithms. 5
- b) Write a note on : AVL tree 5
- c) Explain singly link list with insert and delete algorithm. 4

OR



- a) Explain DFS with its applications. 5
- b) Explain Adjacency matrix and adjacency list for a matrix. 5
- c) Explain Strongly connected components 4

Q.-6 Attempt following. 14

- a) Explain Red Black tree. 5
- b) Explain BFS with its applications. 5
- c) Write an algorithm for in-order and post-order traversal of a tree. 4

OR

- a) Explain binary tree with all types of traversal methods with example. 5
- b) Explain Matrix chain multiplication. 5
- c) Write a note on : Topological sort. 4

