

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name : Design & Analysis of Algorithms

Subject Code : 5CS01WAA1

Branch: M.Sc.IT (WebTech)

Semester : 1

Date : 22/03/2017

Time : 10:30 To 01:30

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.

- | | |
|---|----------|
| | 7 |
| a) Algorithm | 1 |
| b) Divide and Conquer. | 1 |
| c) Greedy Technique. | 1 |
| d) Theta and Omega Notation. | 2 |
| e) Best and average case time complexity. | 2 |

Q.-2 Attempt following.

- | | |
|---|-----------|
| | 14 |
| a) Explain tools for algorithm development. | 5 |
| b) Explain analyzing process of algorithm. | 5 |
| c) Explain order of growth. | 4 |

OR

- | | |
|--|---|
| a) Explain Merge sort algorithm. | 5 |
| b) Explain characteristics of algorithm. | 5 |
| c) Explain Quick sort with algorithm. | 4 |

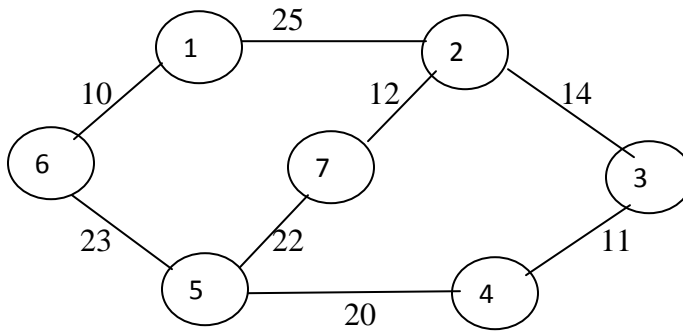
Q.-3 Attempt following.

- | | |
|---|-----------|
| | 14 |
| a) What is greedy strategy? Explain MST with example. | 5 |
| b) Explain Prim's Algorithm. | 5 |
| c) Explain Huffman coding. | 4 |

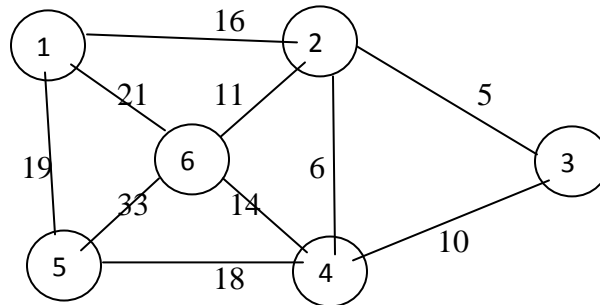
OR



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) Define Heap. Explain Min and Max Heap. 4

SECTION – II

Q.-4 Define following. 7

- a) Tree
- b) Post-order traversal.
- c) Degree of a node.
- d) Internal node.
- e) Stack
- f) Strongly connected components
- g) Double ended queue

Q.-5 Attempt following. 14

- a) Explain Queue 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 BFS 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 DFS with its applications. 5

c) Write an algorithm for Pre-order and post-order traversal of a tree. 4

OR

a) Explain doubly linked list. 5

b) Explain Matrix chain multiplication. 5

c) Write a note on : Topological sort. 4

