**Enrollment No: _____ Exam Seat No:_____**

# C.U.SHAH UNIVERSITY
## Winter Examination-2018

**Subject Name : Design & Analysis of Algorithms**

**Subject Code : 5CS01WAA1 Branch: M.Sc.IT (WebTech)**

**Semester : 1 Date : 28/11/2018 Time : 02:30 To 5:30 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.

---

**SECTION – I**

**Q.-1 Attempt following.**

a) Define the term: Non-ambiguity 1
b) Briefly explain Omega notation . 2
c) Briefly describe issues in divide and conquer. 2
d) Describe applications of binary search 2

**Q.-2 Attempt following.**

a) Explain characteristics of algorithm. 5
b) Discuss role of algorithm in computing 5
c) Explain various properties of algorithm. 4

OR

a) Explain algorithmic analysis of binary search. 5
b) Describe merge sort algorithm and its analysis 5
c) Write a note on: Order of growth 4

**Q.-3 Attempt following.**

a) Describe minimum spanning tree with suitable example 5
b) Explain Kruskal's algorithm. 5
c) Write a note on: Heap property 4

OR

a) Create binary search tree using following elements 5

58 47 25 69 49 78 94 51 24 12
26 68 84 73 13

b) What is Queue? Write an algorithm to insert and delete element in Queue 5
c) Explain Prim's algorithm for minimum Spanning tree. 4

**SECTION – II**

**Q.-4 Attempt following.**

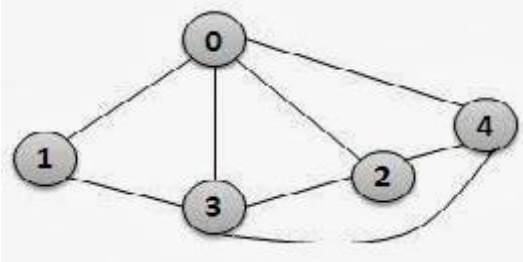
a) What is meant by worst case? 1
b) Define directed and undirected graph 2
c) Differentiate Graph and tree 2
d) Define adjacency matrix 2

**Q.-5 Attempt following.**

a) Explain stack operations with algorithms. 5
b) Write a note on: AVL Tree 5
c) Describe Kruskal's Algorithm with example. 4

OR

a) Explain Breadth First Search with its applications. 5
b) Explain adjacency list for following graph 5




c) Write a note on: Strongly connected components. 4

**Q.-6 Attempt following.**

a) Explain Quick sort with example and algorithm. 5
b) Define graph. Describe strongly connected graph with example. 5
c) Write an algorithm for Pre-order and Post-order traversal of a tree. 4

OR

a) Discuss elements of dynamic programming. 5
b) Explain Depth First Search with algorithm 5
c) Give In order, post order traversal for following. 4