Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name : Data and File Structure
Subject Code : 4TE03DFS1 **Branch:** B.Tech (CE)
Semester : 3 **Date :** 20/03/2019 **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.

Q-1 **Attempt the following questions:**

a)	What is time complexity?	**(01)**
b)	List out applications of queue.	**(01)**
c)	Give the difference between singly linked list and circular linked list.	**(01)**
d)	What is symbol table?	**(01)**
e)	What is the main difference between tree and graph?	**(01)**
f)	What is complete graph?	**(01)**
g)	What is spanning tree?	**(01)**
h)	List out various collision resolution techniques of hashing.	**(01)**
i)	Give the difference between Prim's algorithm and Krushkal's algorithm for minimum spanning tree.	**(01)**
j)	Which data structure is used in breath first search?	**(01)**
k)	List out various tree traversal techniques.	**(01)**
l)	What is recursion?	**(01)**
m)	What is prerequisite for binary search?	**(01)**
n)	What is augmented data structure?	**(01)**

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions**

(a)	Write an algorithm for Bubble sort method. Explain it with an example.	**(07)**
(b)	Discuss about Sequential search method with suitable example.	**(07)**

Q-3 **Attempt all questions**

(a)	What is Stack? List down its applications. Explain push and pop algorithm of Stack.	**(07)**
(b)	Implement simple queue with the help of linked list.	**(07)**

Q-4 **Attempt all questions**

(a)	Write an algorithm to insert and delete a node from last location in a doubly linked list.	**(07)**
(b)	Explain Krushkal's Algorithm with suitable example.	**(07)**

Q-5 **Attempt all questions**

(a) What is the meaning of shortest path in graph? Discuss about Shortest path finding algorithm with example. **(07)**

(b) Do as directed **(07)**

1) Write a short note on Double ended queue.

2) Give the differences between array and linked list.

Q-6 **Attempt all questions**

(a) What is hashing? Write detailed note on various techniques are used to generate hash function. **(07)**

(b) Briefly discuss about various linear and non-linear data structures along with their applications. **(07)**

Q-7 **Attempt all questions**

(a) What is polygons? Discuss about various types of polygon in brief. **(07)**

(b) Create a B-tree of order 5 with keys: 10, 20, 50, 60, 40, 80, 100, 70, 130, 90, 30, 120, 140, 160 and later delete 60. **(07)**

Q-8 **Attempt all questions**

(a) Trace the conversion of infix to postfix notation using stack for given expression: **(07)**

(A + B * C / D - E + F / G / (H + I))

(b) Insert the following sequence of elements into an AVL tree, with keys: 10, 20, 15, 25, 30, 16, 18, 19. and later delete 30 in the AVL tree. **(07)**