UTTARAKHAND TECHNICAL UNIVERSITY

Paper ID and Roll No. to be filled in your Answer book

Roll. No.

EVEN SEMESTER EXAMINATION-2019

Data Structure using C++

Subject Code : TCS 607

Section A

(Attempt any four. All question carry equal marks) 4*5 = (20 marks)

1. What do you mean by constructor. Why they are used. Explain copy constructor.
2. Write worst case time complexity of quick sort.
3. Differentiate linear and non-linear data structures.
4. What is hash function?
5. Compare insertion sort and selection sort.

Section B

(Attempt any four. All question carry equal marks) 4*5 = (20 marks)

1. Define a node of single linked list in C++
2. What are the properties of a binary tree?
3. Write a C++ program to overload + operator to concatenate two strings.
4. Write a C++ program to swap two numbers using function templates.
5. Define and explain about circularly linked list and it's operations with an examples.

Section C

(Attempt any four. All question carry equal marks) 4*5 = (20 marks)

1. Define node of a threaded binary tree?
2. Write an algorithm to traverse a graph using breadth first search.
3. Create binary search tree for the following elements (23, 32, 24, 36, 15, 12, 39, 2, 19).
4. Write a C++ Program to search an element using binary search.
5. What is a priority queue? Explain its applications.

Section D

(Attempt any two. All question carry equal marks) 2*10= (20 marks)

1. Create max heap for the following elements (28, 16, 14, 103, 52, 105, 139, 27, 190)
2. Discuss in detail about asymptotic notations with an examples.
3. Explain in detail about binary tree traversal and its various traversal techniques.

Section E

(Attempt any two. All question carry equal marks) 2*10= (20 marks)

1. Define and explain about circular queue and its operations with an examples.
2. Define two stacks of varying length in a single array. Write function to push and pop elements from this array
3. Write a program to concatenate two circular linked list