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

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech. Winter 2018 - 19 Examination

Semester: 1 **Date: 11/12/2018**
Subject Code: 203202102 **Time: 10:30 am to 1:00 pm**
Subject Name: Advanced Data Structures **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Give the two different applications based on a priority queue and explain it. **(05)**

B) What is Red black tree? Explain with suitable example. **(05)**

C) Solve the example using Extendible hashing – Consider G=2, Bucket Size = 4, H (k) =key mod 64 **(05)**

Key value: 288,8,120,148, 700,258,44

Q.2 **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**

A) Write down the algorithm on searching operation for Skip List in data structure.

B) What do you mean by data dictionary in data structure?

C) What is a k-D tree and what is it used for?

D) What do you mean by Linear Probing and Quadratic Probing in Hashing?

Q.3 A) Explain Huffman code and Generate the Huffman Codes for the following Characters: **(07)**

Character	Frequency
A	15
B	23
C	6
D	13
E	43
F	34

B) Give the Answer of following Questions: **(08)**

1. What is the difference between AVL Tree and Red-Black Tree? **– 4 Mark**
2. What is abstract data type in advance data structure? Explain with suitable example. **– 4 Mark**

OR

B)Give the Answer of following Questions: **(08)**

1. Explain Step by Step execution of Binary Tree Operation – Deletion on the following Give data set. 1,10,8,4,6,3,2,5 (Remove element 2,8,4 from the given data set) - **4 Marks**
2. Explain types of BST – **4 Marks**

Q.4 A) Apply KMP – Pattern Matching algorithm to find whether pattern occurs in given string or not. **(07)**

Justify your answer on given below data.

String : b a c b a b a b a b a c a a b
Pattern: a b a b a c a

OR

A) Explain the Splay tree operations for single rotation with suitable example. **(07)**

B) Discuss and derive recurrence relation for longest common subsequence problem using Dynamic Programming. Find longest common subsequence of following two strings X and Y using Dynamic Programming. X= cabcba , Y= abcbcba **(08)**