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

PARUL UNIVERSITY

FACULTY OF IT & COMPUTER SCIENCE

BCA, summer 2015 – 16 Examination

Semester: 2 **Date: 25/05/2016**
Subject Code: 05101152 **Time:10:00 am to 1:00 pm**
Subject Name: Data Structures **Total Marks: 60**

Instructions:

1. Attempt all questions from each section.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Write separate sections on separate answer sheets.

SECTION-A

Q:1 Do as directed: (Attempt any 5) **[10]**

1. Write a formula to calculate address of 2-Dimensional Array element.
2. Define Data Structure. List any two applications of Data Structure.
3. What is Queue Overflow Fatal Error?
4. Differentiate B Tree and B+ Tree.
5. Define M-ary Tree.
6. Write Threaded Storage Representation of Empty Binary Tree.

Q:2 Do as directed.

(a) Define Stack. List operations on Stack. Write an algorithm for insertion of element into the stack. **[05]**

(b) Discuss best case, worst case and average case of Linear Search Technique with example. **[05]**

OR

(b) Describe briefly three types of structures used for storing strings. **[05]**

Q:3 Differentiate Simple Queue Vs Circular Queue. Discuss insertion operation of Circular Queue by suitable example. Write an algorithm for deletion of element from Circular Queue. **[10]**

OR

Q:3 What are the advantages of Linked List over Array? Discuss insertion of element at the beginning of Linked List step by step by suitable example. **[10]**

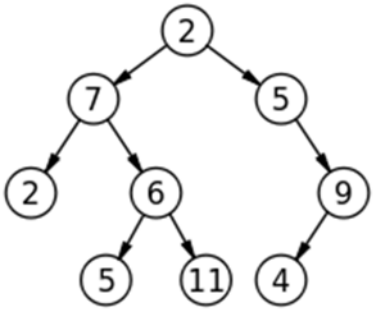
SECTION-B

Q:1 Define B Tree. Construct B Tree of order 5 for the given numbers: **[10]**

1 12 8 2 25 6 14 28 17 7 52 16 48 68 3 26 29 53 55 45

Q:2 Do as directed.

(a) Define Acyclic Graph. List different types of Traversal of Binary Tree. Find Post order Traversal of following tree. **[05]**



(b) Explain Linear Storage Representation method of Binary Tree using suitable example. **[05]**

OR

(b) Explain BFS Algorithm by appropriate example. **[05]**

Q:3 What is Sorting? List various types of Sorting Techniques. Write an algorithm of Binary Search with suitable example. **[10]**

OR

Q:3 What is File Organization? Explain Indexed File Organization in detail with suitable example. **[10]**