UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)
उत्तराखण्ड मुक्त विश्वविद्यालय हल्द्वानी (नैनीताल)

BCA 2nd YEAR 3rd SEMESTER ASSIGNMENT

Last Date of Submission: 15 May 2011

**Course Title: Data Structure & Algorithm**   **Course Code: BCA-301**

Year: 2010-11   **Maximum Marks: 40 Marks**

Section 'A'

Section 'A' contains 08 short answer type questions of 5 marks each. Learners are required to answers 4 questions only. Answers of short answer-type questions must be restricted to 250 words approximately.

1. Compare and contrast structure and a union with the help of suitable example.

2. Write down the applications of the stack.

3. Given a string containing A's and B's where A indicates a push operation and B indicates a pop operation, and with the stack initially empty, Formulate a rule to check whether a given string of operations is admissible or not.

4. Write an algorithm to determine the number of elements (or size) in a linked list.

5. Enter Matrix A and Matrix B of 2×2 and find the matrix multiplication.

6. Given an array of n elements (containing only positive numbers) find the sum. Find an element in the array.

7. Write Inorder, Preorder and Postorder traversal of the following binary tree:
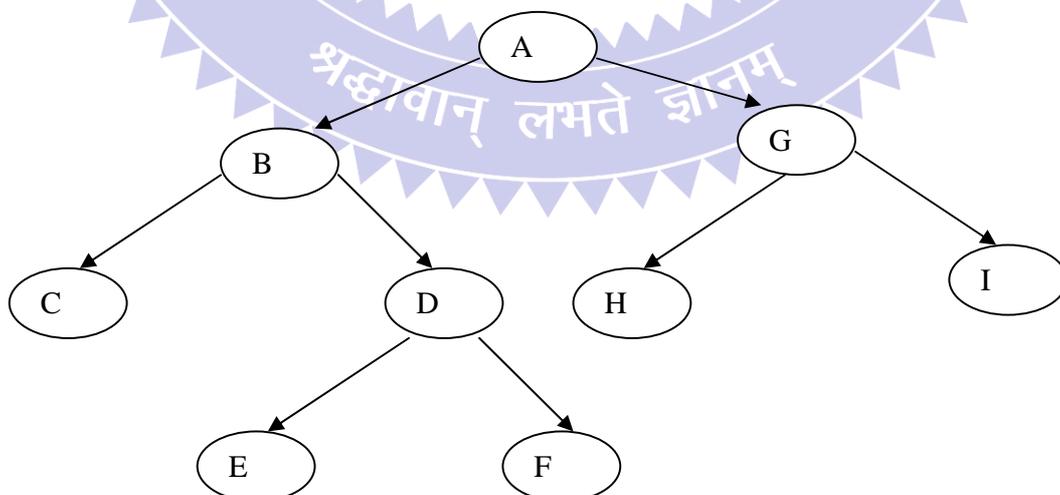
8. Explain indexed sequential file organization. Name the data structure most appropriate for this file organization.

Section 'B' contains 04 long answer-type questions of 10 marks each. Learners are required to answers 02 questions only.

1. Define following with the help of suitable example:
   a) Linked representation of binary tree
   b) Collision resolution
   c) Dynamic memory Allocation
   d) Graph

2. Write an algorithm to delete all occurrences of A from a given doubly linked list.

3. Write algorithm to implement a double ended queue, which is a queue in which insertions and deletions may be performed at either end. Use a linked representation.

4. Write an algorithm to implement bubble sort, and sort the following list in descending order by using the algorithm.
17, 14, 6, 18, 11, 12, 96