



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

BCA 1<sup>ST</sup> YEAR 2<sup>ND</sup> SEMESTER ASSIGNMENT

*Last Date of Submission: 31 May 2016*

**Course Title:** Data Structure through C Language

**Course Code:** BCA-06

**Year:** 2015-16

**Maximum Marks:** 40 Marks

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. Convert the following infix expression into a postfix expression  
 $A * (B+D) / E-F (G + H / K)$
2. Compare linear linked list and double linked list with diagrams.
3. Write a short note of B Tree.
4. Using array to implement the queue structure, write an algorithm/ program to insert an element in the queue.
5. Explain the Complexity of an Algorithm.
6. Write down the algorithm of quick sort.
7. Write a short note on dynamic memory allocation.
8. Write a function that accepts a string and return 1 if the string is palindrome else 0 if string is not palindrome without using any built in function.

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

1. a. What is data structure? Explain the types of data structure with an example.  
b. What is pointer? What are the use of pointer in C?
2. a. Define data type and abstract data type. Comment upon the significance of both.  
b. Write an algorithm to insert a node in between any two nodes in a linked list.
3. a. Write an algorithm to count number of nodes in the circular linked list.

- b. What are linked lists? How do they compare with arrays? Give their relative merits of both when certain operations are carried out.
4. a. Explain various graph traversal schemes and write their merits and demerits.
- b. Write down any four application of a stack.

