

Roll No. ....

**BCA-06 (Bachelor of Computer Application)**

**Examination 2013**

**BCA-06**

**Data Structure Through 'C' Language**

**Time: 3 Hours**

**Max. Marks 60**

**Note: The Question paper has been divided in three sections- A, B and C. Answers the Questions as per instructions given in each sections.**

**Section 'A'**

**(Long Answer's Question)**

**Answer any two questions. Each question carries 15 Marks.**

**(2\* 15 =30)**

1.(a) Define a structure named 'cricket\_team' that will describe the following information:

Player name

Score.

Total Score

Using the structure, input two teams A and B, players (Each team should contain 10 Players) and their scores. Print the total scores of both teams and the winner. (10)

(b) What are the disadvantages of linear queue? How these are removed using circular queue? (5)

2. (a) Formulate an algorithm to insert an element in a double linked list. (7)

(b)What is the difference between DFS and BFS? Explain with example. (8)

3. Write an algorithm for each of the following :- (8)

(i) Inorder traversal

(ii) Postorder traversal

(b) Suppose the following sequences list the nodes of a binary tree T in preorder and inorder, respectively;

Preorder: G,B,Q,A,C,K,F,P,D,E,R,H

Inorder: Q,B,K,C,F,A,G,P,E,D,H,R

Draw the diagram of the tree. (7)

4. (a) compare the following memory allocation techniques (7)

(i) Static

(ii) Dynamic

(b) Define the following terms using suitable examples. (8)

(i) Regular Graph

(ii) Weighted Graph

### Section 'B'

**Note: Answer any four questions. Each question carries 5 Marks. 4\*5=20**

1. What are primitive and non primitive data structures? Give example.
2. Write an algorithm to insert an element into any array.
3. Differentiate between stack and queue and give its applications.
4. Convert  $A*(B+D)/E-F*(G+H/K)$  into postfix expression.
5. Write a procedure for binary search.
6. What is an array? Differentiate between one dimensional and two dimensional arrays.
7. Define the following terms
  - (a) Degree
  - (b) Forest
8. Compare linear queue with circular queue.

### Section 'C'

#### (Objective Type Questions)

**Answer All Questions. Each Question carries 01 Mark. (10\*1=10)**

**True/False**

1. A one dimensional array is a list of finite number n of homogeneous data elements.
  - a. True
  - b. False
2. An array is a collection of similar elements.
  - a. True
  - b. False
3. Parenthesis are never needed in prefix or postfix expressions.
  - a. True
  - b. False
4. The first end of the queues is called 'Rear' and the later is called 'Front'
  - a. True
  - b. False
5. A binary tree can not have odd number of nodes.
  - a. True
  - b. False

**Multiple Choice Questions**

1. Representation of data structure in memory is known as:

(A) recursive	(B) abstract data type
(C) storage structure	(D) file structure
2. Quick sort is also known as

(A) merge sort	(B) heap sort
(C) bubble sort	(D) none of these

What is the postfix form of the following prefix  $*+ab-cd$

- |               |               |
|---------------|---------------|
| (A) $ab+cd-*$ | (B) $abc+*-$  |
| (C) $ab+*cd-$ | (D) $ab+*cd-$ |

A queue is a,

(A) FIFO (First In First Out) list.

(B) LIFO (Last In First Out) list.

(C) Ordered array.

(D) Linear tree.

Consider that  $n$  elements are to be sorted. What is the worst case time complexity of Bubble sort?

(A)  $O(1)$

(B)  $O(\log_2 n)$

(C)  $O(n)$

(D)  $O(n^2)$