# CHRIST UNIVERSITY,BENGALURU - 560029

## End Semester Examination March - 2017
### Bachelor of Computer Applications II SEMESTER

Code: BCA234                                      Max.Marks: 100
Subject: DATA STRUCTURES                          Duration: 3Hrs

### SECTION A

**Answer ALL Questions**                                      10X2=20

1   Define data type and abstract data type.
2   Mention any two disadvantages of a recursive function.
3   What are the various types of structures used to store strings?
4   Explain the relation between recursion and stack.
5   What is a linear queue?
6   What are the drawbacks of representing queue using linked list?
7   Define doubly linked circular list.
8   What is a binary tree?
9   Define degree of a node.
10  What is external sort? Give example.

### SECTION B

**Answer Any FIVE Questions**                                      5X6=30

11  Determine the space complexity of the iterative function for finding the sum of n numbers.
12  Represent two dimensional array using pointers. Explain with neat diagram.
13  How the recursive calls are maintained in a computer system? Explain with suitable examples.
14  Write appropriate algorithms to perform the stack operations using arrays.
15  How do you erase a polynomial represented using singly linked lists?
16  Write an algorithm for POSTORDER traversal in a Binary Tree.
17  Explain bubble sort with at least eight elements in the array.

### SECTION C

**Answer Any FIVE Questions**                                      5X10=50

18  What is a structure data type? Consider the following information of an employee like name, department, employee number, basic salary, DA,HRA,Income tax and PF. Write a C program to calculate the gross salary and net salary of all employees using array of structures.
19  Write a menu driven program to find the length of a string, compare, copy and concatenate two strings using pointers.
20  Convert the following expression into postfix form and evaluate the postfix expression using stack.

    12/(7-3)+2*(1+5)

21  Write and explain the queueFull and queueEmpty functions of the circular queue with examples.
22  Write a program to traverse the doubly linked list from left to right. Print neatly the values of the list using forward display and backward display.
23  Construct a binary tree whose nodes in in-order and pre-order are given as follows:

    In-order : E A C K F H D B G
    Pre-order: F A E K C D H G B

    Explain the process of your construction.
24  Sort the following set of data in ascending order using quick sort. 42, 25, 79, 31, 63, 51, 59, 15, 48, 19. Write the result of each iteration.