CHRIST (DEEMED TO BE UNIVERSITY),BENGALURU - 560029

End Semester Examination March - 2018

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 What is the benefit of sentinel in data structure?

3 What is string indexing?

4 Define Infix and postfix notations.

5 What is a circular queue?

6 How do you create a node in a linked list?

7 Define doubly linked list. Mention its applications.

8 What are the different types of tree traversal techniques available? Give one example for each type.

9 What are the properties of binary search tree?

10 What is the advantage of quick sort?

SECTION B

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

11 Analyze the efficiency of insertion and deletion operation in a sorted array.

12 Create a function for matrix addition using dynamic memory allocation.

13 Write a C program to find the binomial coefficient using recursion.

14 Write appropriate algorithms to perform the stack operations using arrays.

15 Explain the process for erasing a node from the circular linked list.

16 Write an algorithm for finding largest number in a Binary Search 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 a student like name, department, student register number, marks of various subjects.Write a C program to calculate the total and average of all students in a class using array of structures.

19 Write an algorithm to perform binary search. Compare the complexity of binary search with that of linear search algorithm. Explain with suitable examples.

20 Write an algorithm to evaluate the postfix expression using the stack. Use the algorithm to evaluate 3 5 + 7 5 - * 5 2 - 2 ^ +.

21 Discuss all the circular queue operations in details with relevant diagrams.

22 Write a menu driven program to delete a node from a singly linked list.

23 Write a function to add an element from a binary search tree.

24 Consider the following attributes of a product in a shop management system: Product-number, Product-Name, Product-price and Stock-level. Write a C program to sort the products based on Product-Id using selection sort.