

BCA DEGREE END SEMESTER EXAMINATION MARCH 2017**SEMESTER – 2: BACHELOR OF COMPUTER APPLICATION (BCA) CORE COURSE****COURSE: 16U2CRBCA6 –: DATA STRUCTURE USING 'C'***(For Regular - 2016 admission)*

Time: Three Hours

Max. Marks: 75

PART AAnswer **all** questions. Each question carries **1** mark.

1. Define Data structure.
2. Define space complexity of an algorithm.
3. What is Dynamic Memory Allocation?
4. FIFO stands for _____.
5. What is the time complexity of merge sort algorithm?
6. What is a DEQUE?
7. What are the disadvantages of arrays?
8. What is the difference between singly linked list and doubly linked list?
9. What is a terminal node in a tree?
10. Define Graph. (1 x 10 = 10)

PART BAnswer **any eight** questions. Each question carries **2** marks.

11. Distinguish between row major order and column major order representations of arrays.
12. Explain any two string handling functions in C.
13. Give a recursive algorithm to find GCD.
14. Explain how Divide and Conquer Strategy is used in merge sort.
15. Explain any two applications of Queue.
16. What is a Priority Queue?
17. What are the advantages and disadvantages of linked list?
18. Define Circular linked list.
19. What is a heap tree and what is its application?
20. Explain any two applications of Graph. (2 x 8 = 16)

PART CAnswer **any five** questions. Each question carries **5** marks.

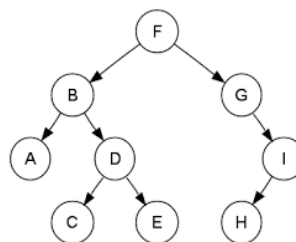
21. Explain different dynamic memory allocation functions in C.
22. Explain recursive and non-recursive algorithms for binary search.
23. Write a C program to sort N numbers using insertion sort.
24. How to implement a stack using array? Explain basic operations of stack.

25. Write an algorithm to convert infix expression to postfix notations using stack. Explain algorithm with an example.
26. Write an algorithm to concatenate two singly linked list.
27. Give a recursive algorithm to traverse a singly linked list reversely. (5 x 5 = 25)

PART D

Answer **any two** questions. Each question carries **12** marks.

- 28.
- Explain quick sort algorithm with given example
L=(26 , 5 , 37, 1 , 61, 11, 59, 15, 48, 19)
 - Explain the following (i) Binary Search Tree (ii) Complete Binary Tree
- 29.
- How to represent Queue using arrays? Also explain algorithms for basic operations on Queue.
 - Explain different operations on DEQUE.
- 30.
- Write a program to insert a node in Singly linked list in the below three cases
 - At beginning
 - At end
 - After a specific node.
 - Explain three cases of deletion operation on Doubly Linked List
- 31.
- Explain inorder, preorder and postorder traversal on a binary tree. Also trace how these traversals work on the following tree.



- Compare Breadth First search and Depth First Search. (12 x 2 = 24)
