TB222470W

Reg. No :.....

Name :.....

BCA DEGREE (C.B.C.S.) EXAMINATION, MARCH 2023

2022 Admissions Regular & 2021 Admissions Supplementary / Improvement And 2020, 2019 And 2018 Admissions Supplementary

SEMESTER II - CORE COURSE (CLOUD TECHNOLOGY AND INFORMATION SECURITY MANAGEMENT)

BCA2B06B18 - DATA STRUCTURES USING C

Time : 3 Hours **Maximum Marks : 80**

Part A

I. Answer any Ten questions. Each question carries 2 marks **(10x2=20)**

1. Recall static memory allocation. Give an example.
2. List down the funcions of free() and realloc().
3. Cite the best case and worst case complexities of bubble sort and quick sort.
4. Identify the best case and worst case complexities of selection sort and quick sort.
5. Convert a+b*c into postfix notation.
6. Identify the different types of double-ended queues.
7. Write the application areas of a queue.
8. Define linked list. Discuss how is it represented in memory.
9. Write a code snippet to create a new node in a linked list and explain the same.
10. Define (i) Loop (ii) Weight, with respect to a graph.
11. Define (i) Edge (ii) Depth with respect to a tree.
12. Define a complete binary tree. Give an example.

Part B

II. Answer any Six questions. Each question carries 5 marks **(6x5=30)**

13. Explain recursion and state its merits and demerits.
14. Write a program to copy one string into another and count the number of characters copied without using inbuilt functions.
15. Write a program to implement binary search in C using recursion.
16. Determine how will you delete an element from a circular queue.
17. Determine how will you insert an element in a circular queue.
18. Write a program to demonstrate traversing in a doubly Linked List.
19. Write a C program for deleting a node from a doubly linked list.
20. Explain the following graph representations (i) Adjacency matrix representation (ii) Incedence matrix representation
21. Illustrate how will you insert an element into a Binary Search Tree?

Part C

III. Answer any Two questions. Each question carries 15 marks **(2x15=30)**

22. Explain about the string manipulation functions in C. Create a program to reverse a string.
23. Illustrate how you would perform Insertion Sort and Selection Sort in the given array. Give proper explanation for each step. Array:- 2, 4, 1, 8, 4, 9

24. Write a short note on the applications of stack.
25. Write an essay on Linked List and the various operations performed on it.