QP CODE: 23003344

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Reg No : .....

Name : .....

M Sc DEGREE (CSS) EXAMINATION, APRIL 2023

First Semester

M.Sc.Computer Science (Data Analytics)

CORE - CA030104 - DATA STRUCTURE USING C

2020 ADMISSION ONWARDS

A9864A82

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What is two way selection statements? Explain if, if else, and cascaded if-else with examples.
2. List out the differences between unions, structures and arrays
3. What are arrays ? Give the syntax to declare an array in C. How do you represent single dimensional arrays in memory?
4. Explain the advantages of a circular queue.
5. How can we insert a node at the beginning of a single linked list?
6. Explain linked queue with an example.
7. Explain tree traversals with examples.
8. List out the steps involved in deleting a node from a binary search tree.
9. Write a note on graph terminology.
10. Write the concept of Prim's Algorithm

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Write a C program that reads from the user an arithmetic operator and two operands, perform the corresponding arithmetic operation on the operands using switch statement
12. How to declare a recursive function? Write the syntax of recursive function with suitable example.

13. Write an algorithm to evaluate a postfix expression

14. Explain Radix sort algorithm with an example.

15. What is doubly linked list.What are the merits of doubly linked list?

16. How can we free memory by using boundary tag system?

17. Explain binary tree representation and different types of binary tree.

18. Write a short note on steps in Depth First Search .

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Discuss the operations performed on stack and show how the expression X= (4 * 5) * (9 – 5) is evaluated in stack.

20. Give a note on circular linked list. How can we insert and delete a node at the specific location in a circular linked list.

21. a. Insert the following sequence of elements into an AVL tree, starting with an empty tree, 10, 20, 15, 25, 30, 16, 18, 19 b. Delete 30 in the AVL tree that you got

22. Define hash function and need of hash table. Explain how overflow handilng is performed

(2×5=10 weightage)