Reg. No ....   Name **24U223**

B. Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2024
SEMESTER 2 - COMPUTER APPLICATION
COURSE : **19U2CRCAP4 - DATA STRUCTURES USING 'C'**
(For Regular - 2023 Admission and Improvement / Supplementary – 2022/2021/2020/2019 Admissions)

Time : Three Hours   Max. Marks: 75

PART A
Answer All (1 mark each)

1.   What is dynamic memory allocation?
2.   How many number of elements are in array A[-1:2,2:6]?
3.   The process to add an element into queue is called ------------.
4.   How many number of elements are in array A[-1:25]?
5.   --------------- function is used to deallocate the memory.
6.   Which data structure is used in BFS?
7.   What is unary operator?
8.   What is Dequeue?
9.   What is an identifier?
10. What is edge?

                                                                (1 x 10 = 10)

PART B
Answer any 8 (2 marks each)

11. What is postfix representation of an expression?
12. What is a data structure? List out its classification.
13. How to represent arrays in memory?
14. What is the difference between terminal nodes and non-terminal nodes?
15. What is a circular queue?
16. What is unary operator? List out the different operators involved in the unary operator.
17. What is a complete binary tree?
18. Write short note on Input & Output functions used in C (i.e. print &scanf functions?
19. Differentiate between singly linked list and doubly linked list.
20. Translate into polish form: ->   (A+B)*(C/D-E)+F)-G

                                                                (2 x 8 = 16)

PART C
Answer any 5 (5 marks each)

21. What is garbage collection? Explain.
22. What is the difference between while and do...while loop? Explain with examples.
23. Write adjacency matrix and adjacency list of the following graph.

> Building a
> Graph data
> structure in
> PHP –
> codediesel
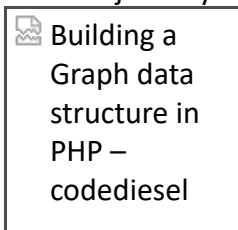
24. What is the diffrence between homogeneous and heterogeneous data structure?.

25. An array X[-15....10, 15.......40] requires one byte of storage. If the beginning location is 1500 determine the location of X[15[20], when the matrix is arranged (i) Column major wise, and (ii) Row major wise.

26. Write about the applications of stack and queue.

27. Explain the steps to create a Binary Search Tree.

(5 x 5 = 25)

PART D
Answer any 2 (12 marks each)

28. Write the algorithm for Bubble sort and trace bubble sort algorithm on the list L={93,79,34,68,57,90,18,53,69,20}

29. Explain the infix to postfix conversion procedure using stack with an example.

30. Explain the following with suitable diagrams.
    1. Singly Linkedlist
    2. Doubly Linkedlist
    3. Circular Linkedlist

31. Explain different types of trees with suitable examples.

(12 x 2 = 24)