Reg. No ..... Name **21U220**

B Sc DEGREE END SEMESTER EXAMINATION - JULY 2021

SEMESTER 2 : COMPUTER APPLICATION

COURSE : **19U2CRCAP4 : DATA STRUCTURES USING 'C'**

(For Regular - 2020 Admission and Supplementary - 2019 Admission)

Time : Three Hours Max. Marks: 75

PART A

Answer any 10 (1 marks each)

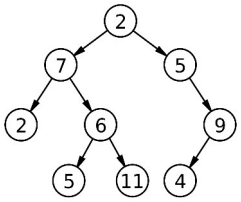
1. Define Token
2. How many bytes are required to store integer type value?
3. Name any two non-linear data structures.
4. The memory address of the first element of an array is called.....
5. Expand FIFO.
6. Process of removing an element from a stack is known as .....
7. What is static memory allocation?
8. ..... function is used to deallocate the memory.
9. What is un-Directed Graph?
10. What is the degree of a terminal node?

(1 x 10 = 10)

PART B

Answer any 8 (2 marks each)

11. Difference between relational and logical operators.
12. Write the syntax of if.....else statement in C
13. How to represent a sparse matrix.
14. How to calculate the address of an element of a single dimensional array?
15. What are the applications of circular queue?
16. What is Deque?
17. What is a pop operation?
18. You have a linked list that need not be sorted. YUou need to insert a new node to it. Where will you insert this node? Why?
19. What is depth of a tree?
20. Write the level order traversal of the following tree.



(2 x 8 = 16)

PART C

Answer any 5 (5 marks each)

21. What is the difference between while and do...while loop with examples
22. What are the differences between linear search and binary search techniques?
23. A two-dimensional array defined as X[3.....6, -2……2] requires 2 bytes of storage space for each element. Determine the address of X[5][1], given the base address is 1200., when the array is stored in (1) row major wise and (2) column major wise.

24. Evaluate the following postfix expression using stack
    2 3 1 * + 9 -
25. Compare the static and dynamic memory allocation techniques.
26. Explain different types of graphs with examples.
27. What is tree traversal? Develop the procedure for in-order tree traversal. Trace with a suitable example.

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

28. Explain the procedure of Bubble Sort with an example.
29. Give the postfix form of the following given expression using stack.
    (i) (A-B*C-D)/(E+F)
    (ii) ((A+B)*C-(D-E)^(F+G))
    (iii) A+B*(C-D)/(P-R)
30. What is doubly linked list? Develop the procedure for insertion and deletion processes.
31. Explain different types of trees with suitable examples?

(12 x 2 = 24)