Reg. No ..... Name **24U238**

B C A DEGREE END SEMESTER EXAMINATION - MARCH 2024

SEMESTER 2 - MOBILE APPLICATIONS AND CLOUD TECHNOLOGY

COURSE : **19U2CRBCA6 - DATA STRUCTURES USING C**

(For Regular - 2023 Admission and Improvement / Supplementary –2022/ 2021/2020/2019/2018/2017/2016 Admissions)

Time : Three Hours Max. Marks: 75

PART A

Answer All (1 mark each)

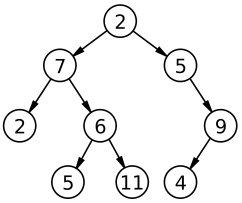
1. Draw the structure of a doubly linked list?
2. What is sorting?
3. What is a sibling?
4. What is searching?
5. What is the time complexity of bubble sort?
6. What is a node?
7. Expand FIFO.
8. Write the syntax of malloc()?
9. Define recursion.
10. What is the degree of a tree?

(1 x 10 = 10)

PART B

Answer any 8 (2 marks each)

11. What is the use of * (asterisk operator)?
12. What is linear queue in data structure?
13. What is the idea behind merge sort?
14. What is max heap tree?
15. Write inorder traversal of the following tree?



16. Difference between malloc() and calloc()?
17. What is the use of &(address operator)?
18. Define a C node structure for a linked list of students?
19. Translate into polish form: -> (A+B)*(C/D-E)+F)-G
20. What is binary search algorithm in data structure?

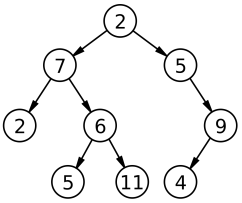
(2 x 8 = 16)

PART C

Answer any 5 (5 marks each)

21. Differentiate between infix and postfix notations.
22. Write the intermediate steps of bubble sort of the following: 5, 2, 12, 13, 4, 9, 15, 25, 3.

23. Write all traversals of the following tree?



24. Give the prefix form of the following given expression using parenthesis.
\ (i) (A-B*C-D)/(E+F) (ii) ((A+B)*C-(D-E)^(F+G)).

25. What do you mean by Space & Time complexity of an algorithm?

26. What are the properties of the Heap tree?

27. Develop an algorithm to delete an element from a doubly linked list.

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

28. Explain the following with suitable diagrams;
1. singly Linkedlist
2.Doubly Linkedlist
3. Circular Linkedlistt

29. Explain merge sort algorithm with example also write the c program.

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

31. A binary tree has 9 nodes. The in order and pre -order traversals yield the following sequence of nodes.
In-order: E A C K F H D B G
Pre-order F A E K C D H G B
Construct the binary tree.

(12 x 2 = 24)