Reg. No…….. Name…… **20U220S**

B.Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2020

SEMESTER **–2: COMPUTER APPLICATIONS (CORE COURSE)**

COURSE: **15U2CRCAP4: DATA STRUCTURES USING 'C'**

(Common for Improvement 2018 /Supplementary 2018/2017/2016 /2015 Admissions)

Time: Three Hours Max Marks: 75

PART A

Answer all questions. Each question carries 1 mark.

1. In which data structure data is accessed in FIFO manner.
2. What is the postfix equivalent of given infix expression (A+(B/C))*D.
3. What do you mean by sorting?
4. Explain the index of an array.
5. List any two applications of data structures.
6. What is recursion?
7. How many link fields are there in doubly linked list?
8. What is the use of malloc() ?
9. What do you meant by complete binary tree?
10. How data can be accessed from a random file? (1 x 10 = 10)

PART B

Answer Any eight questions. Each question carries 2 marks.

11. Define Data structure and how it is classified?
12. What is binary search technique
13. Write the algorithm to add an element in stack.
14. Explain 2D –array in detail.
15. Discuss sparse matrix with example.
16. Give an algorithm to insert an element to the linked list.
17. Define Binary tree. Discuss its components with an example.
18. Write a program to find the number of nodes in a linked list using recursion.
19. Explain the Best case and worst case efficiency of Binary search algorithm.
20. What are multiple stacks? (2 x 8 = 16)

PART C

Answer Any five questions. Each question carries 5 marks.

21. Discuss the classification of different data structures in detail.
22. How do you represent two dimensional array In memory?
23. Write a program to implement stack. Illustrate with Push and Pop operations.
24. Discuss various applications of queue.
25. Explain the deletion of a node from a doubly linked list
26. What is a Binary tree. Explain its components and types in detail.
27. Discuss cellular partitioning in detail.
28. What do you mean by Hashing? Explain any one hashing technique in detail. (5 x 5 = 25)

PART D

Answer Any Two questions. Each question carries 12 marks.

29. Write the algorithm and program for bubble sort and trace this algorithm on the given list.
    L = { 72, 30, 69, 90, 82, 50, 45}.
30. Explain the different operations performed on stack and show how the expression
    x = (4 – 5) * (9 * 5) is evaluated using stack.
31. Discuss different tree traversals with algorithm and example.
32. Discuss different file organizations in detail. (12 x 2 = 24)

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