19U420S   (Pages: 2)   Name: ...……...…………….

                                                    Reg. No: …...………………...

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2021
(CUCBCSS-UG)

CC17U CSC4 C04 - DATA STRUCTURE USING C PROGRAMMING
(Computer Science)

(2017, 2018 Admissions – Supplementary/Improvement)

Time: Three Hours   Maximum: 64 Marks

PART A
Answer *all* questions. Each question carries 1 mark.

1. Linked list is a -----------------data structure

    (a) Dynamic   (b) Static   (c) Indexed   (d) None

2. is a non linear data structure.

3. The number of elements of an array A[1:N]= ------------------

4. The prefix form of the expression (A * B - C) is ------------------

5. In queue elements are removed from -------------------

6. In row major order representation of a two dimensional array A, the address of $(i,j)^{th}$ element is calculated as -------------------

7. A linked list with two links each pointing to the predecessor and successor of a node is known as -------------------

8. Under flow condition of Circular Queue is -------------------

9. Best case time complexity of selection sort is -------------------

(9 × 1 = 9 Marks)

PART B
Answer *all* questions. Each question carries 2 marks.

10. Briefly discuss about the classification of various data structures available in C

11. What is time complexity?

12. Define a Dequeues.

13. What are the advantages of linked list over array?

14. What are the applications of queues?

(5 × 2 = 10 Marks)

PART C
Answer any *five* questions. Each question carries 5 marks.

15. Explain how PUSH and POP operations are performed on a stack.

16. Write an algorithm to add a new node at the specified location of a singly linked list

17. Write an algorithm to delete an element from the end of the double linked list.

18. What is a priority Queue? Explain different priority queue representations.

19. Consider a circular queue initially having 3 elements A, B, C inserted in same sequence and having a maximum capacity of 5 elements. Show the current value of **FRONT & REAR**.Delete2 elements from the queue and insert 4 more elements **(D, E, F, and G)** in the queue and show the final position of **REAR & FRONT.**

20. Write an algorithm to search an element in a singly linked list.

21. Explain the way to represent a sparse matrix using arrays.

22. Explain the bubble sort technique.

$(5 \times 5 = 25$ **Marks)**

PART D
Answer any *two* questions. Each question carries 10 marks.

23. Explain all array operations.

24. Explain linear search and binary search with example.

25. What is a circular queue? Write the algorithms for insertion and deletion operations on a circular queue.

$(2 \times 10 = 20$ **Marks)**

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