THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2021
(CUCBCSS-UG)
CC17U BCS3 B04 - DATA STRUCTURES USING C
(Computer Science - Core Course)
(2017, 2018 Admissions – Supplementary/Improvement)

Time: Three Hours   Maximum: 80 Marks

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

1. Tree is a -------------- data structure

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

2. -------------- is a non-contigous data structure.

3. Node which has no childern is called:

    (a) Root node   (b) Terminal node

    (c) Non-terminal node   (d) None of the above

4. The time complexity of binary search --------------

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

6. The time complexity of bubble sort --------------

7. What is the graph called in which every node u in G is adjacent to every other node v in G?

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

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

10. Under flow condition of Stack is --------------

(10 × 1 = 10 Marks)

PART B
Answer *all* questions. Each question carries 3 marks.

11. Briefly discuss about the categories of various data structures available in C

12. What is space complexity?

13. Define a Double ended queue?

14. Write the differences between linear search and binary search?

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

(5 × 3 = 15 marks)

PART C

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

16. Explain stack operations with algorithm?

17. Explain Linear Queue and its operations using Array with algorithm and example?

18. Explain deletion in double linked list with algorithm and example?

19. Explain circular queue with algorithm and example?

20. Explain deletion in singly linked list with algorithm and example?

21. Explain recursion with an example?

22. Explain the way to represent a sparse matrix using arrays?

23. Explain the insertion sort technique?

(5 × 5 = 25 Marks)

PART D

Answer any *three* questions. Each question carries 10 marks.

24. Explain all array operations with algorithm and example?

25. Explain algorithm for converting a given infix expression to its postfix notation with example?

26. Discuss the application of graph structures. Explain BFS, DFS?

27. Explain the quick sort technique with example?

28. Explain different tree traversal techniques with example?

(3 × 10 = 30 Marks)

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