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## THIRD SEMESTER (CBCSS-UG) DEGREE EXAMINATION NOVEMBER 2021

**Computer Science** 

BCS 3B 04—DATA STRUCTURES USING C

(2019–2020 Admissions)

Time : Two Hours

Maximum : 60 Marks

## Section A

Answer atleast **eight** questions. Each question carries 3 marks. All questions can be attended. Overall ceiling 24.

- 1. What are data structures ? Examples.
- 2. Explain the string operation, "Concatenation".
- 3. How to represent a one dimensional array in memory ?
- 4. What are the advantages of dynamic memory allocation ?
- 5. Specify one of the applications of a linked list.
- 6. What is the significance of the term "top of the stack" ?
- 7. Explain the procedure to add a new element in to a linear queue.
- 8. What are priority queues?
- 9. Define a binary tree data structure with example.
- 10. Explain in-order tree traversal procedure.
- 11. What is directed graph?
- 12. What is the basic concept of a linear search ?

 $(8 \times 3 = 24 \text{ marks})$ 

## **Section B**

Answer atleast **five** questions. Each question carries 5 marks. All questions can be attended. Overall ceiling 25.

- 13. What are the features of a good algorithm ? Discuss the complexity measures.
- 14. What are sparse matrices ? Explain its memory representation and operations.

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- 15. Develop the algorithm to insert a node in a singly linked list.
- 16. What is recursion ? Explain the requirement of a stack in recursion process.
- 17. What is circular queue ? Explain the procedure to add a new element in to a circular queue.
- 18. Explain the binary tree representation in memory using arrays and linked list.
- 19. Explain the selection sort procedure with example.

 $(5 \times 5 = 25 \text{ marks})$ 

## Section C

Answer any **one** question. Each question carries 11 marks.

- 20. What is linked list representation of queue in memory? Develop the implementation algorithms.
- 21. What are binary search trees ? Develop the algorithm to create a binary search tree in memory.

 $(1 \times 11 = 11 \text{ marks})$