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

Computer Science<br>BCS 3B 04—DATA STRUCTURES USING C<br>(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 ?

## 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.
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.

## 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.

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