THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2022

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

(2019 Admission onwards)

Time: Two Hours

Maximum: 60 Marks

Section A (Short Answer Type Questions)

Answer all questions, each correct answer carries a maximum of 2 marks.

Ceiling 20 marks.

- 1. What are derived data types? Example.
- 2. List out any three string manipulation operations?
- 3. How to perform a traversal in an array?
- 4. What are the limitations of a linear array representation?
- 5. Explain the basic structure of a doubly linked list.
- 6. What is LIFO terminology? Example.
- 7. What are linear queues?
- 8. Specify the advantages of a circular queue.
- 9. Define the tree data structure with example.
- 10. Explain the pre-order tree traversal procedure.
- 11. What is undirected graph?
- 12. What are hash functions? Example.

Section B (Short Essay Type Questions)

Answer **all** questions, each correct answer carries a maximum of 5 marks.

Ceiling 30 marks.

- 13. What is a data structure? Explain its classification with suitable examples.
- 14. Explain the procedure to insert an element in a specified position of an array.

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- 15. Develop the algorithm to delete a node from a singly linked list.
- 16. What are Stacks? Explain the implementation of linear stack in memory.
- 17. What are various types of priority queues? Explain.
- 18. How to represent an expression in a binary tree? Also, perform a post order traversal on that tree.
- 19. Explain the depth first and breadth first graph traversals.

Section C (Essay Type Questions)

Answer any one question, correct answer carries 10 marks.

- 20. What is polish notation? Explain the procedure to convert an infix expression in to post fix with the help of an operand stack.
- 21. Explain the quick sort algorithm and also find the efficiency measures.

 $(1 \times 10 = 10 \text{ marks})$