

D 91686

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Name.....

Reg. No.....

**THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2020**

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A

Answer all questions.

Each question carries 1 mark

1. Define Data structure.
2. What are substrings and pattern matching ?
3. Define linear array.
4. What are linked list ?
5. What are polish and Reverse polish notations ?
6. How a queue is represented in a computer ?
7. Define a complete Binary tree.
8. What are binary search tree ?
9. Define DFS and BPS traversal of graph.
10. Name two sorting algorithms.

(10 × 1 = 10 marks)

Part B

Answer all questions.

Each question carries 3 marks.

11. Briefly explain the data structure operations.
12. Write the linear search algorithm.
13. Write an algorithm to insert a node at the beginning of a linked list.

Turn over

14. Evaluate the postfix expression P : 5, 6, 2, +, *, 12, 4, /, - using stack.
15. What are directed, undirected and weighted graphs ? (5 x 3=15 marks)

Part C

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

16. Explain the different types of structures that are used for storing strings.
17. What are linear arrays ? How they are represented in memory of a computer ?
18. Given an integer K, write a procedure which deletes the Kth element from a linked list.
19. Write the procedures to push an item into the stack and pop an item from the stack.
20. What are priority queues ? Explain the array representation of priority queue.
21. Explain the traversing of binary trees with an example.
22. With the help of suitable example explain selection sort and merge sort.
23. Explain hashing and hash functions.

(5 × 5 = 25 marks)

Part D

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

24. Write notes on a) Complexity of algorithms ; and b) Space -time tradeoff. Explain the complexity of any three algorithms with examples.
25. What are linked lists ? Explain the algorithm to delete node following a given node from a linked list.
26. What are Queues ? Write the algorithm for insertion and deletion in simple queue.
27. Explain the basic operations of searching and inserting with Binary search tree.
28. Define a graph. Explain the various methods of traversing a graph.

(3 × 10 = 30 marks)