

Q.P. Code : 15221

Second Semester B.C.A. Degree Examination, May/June 2019

(CBCS – Freshers)

Computer Science

Paper BCA 203 — DATA STRUCTURES

Time : 3 Hours]

[Max. Marks : 70

Instructions to Candidates : Answers All Sections.

SECTION – A

Answer any **TEN** questions, each question carries **2** marks : **(10 × 2 = 20)**

1. What is non-linear data structure?
2. Define space and time complexity of an algorithm.
3. What is recursion?
4. What is dynamic memory allocation?
5. What is circular queue?
6. Compare linear search and binary search techniques.
7. Write 'C' function to find number of characters in a string.
8. Differentiate between terminal and non-terminal nodes of a tree.
9. List disadvantages of a Linked List.
10. Mention different ways of graph traversals.
11. List different operations on Binary Tree.
12. What is Binary Search Tree?

SECTION – B

Answer any **FIVE** questions, each question carries **10** marks : **(5 × 10 = 50)**

13. (a) Explain classification of data structure and operations on data structure. **(6)**
- (b) Explain Asymptotic notations. **(4)**

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14. (a) Write an algorithm to insert an element into an array at a specified position. (5)
- (b) Write a C program to extract a substring from a given string. (5)
15. (a) Write a C function to perform insertion and deletion operations on stack. (5)
- (b) Write a C function to implement bubble sort. (5)
16. (a) Define a Linked List? Explain different types of linked list, mention the advantages of linked list. (6)
- (b) Write an algorithm to insert a node at the beginning of a linked list. (4)
17. (a) Write an algorithm to delete an element into priority queue. (5)
- (b) Write an algorithm to evaluate postfix expression. (5)
18. (a) What is double ended queue? Write an algorithm to insert an element at rear end of the deque. (6)
- (b) What is Queue? Mention applications of queue. (4)
19. (a) Explain strictly and complete binary tree with example. (4)
- (b) Write an algorithm for the following :
- (i) In order tree traversal
- (ii) Post order tree traversal
- (iii) Preorder tree traversal. (6)
20. (a) Write an algorithm for Breadth first search. (5)
- (b) Define properties of Binary Tree. (5)