

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2019

FDP Under CBCSS

Complementary Course for Statistics and Mathematics

CS 1431.2/CS 1431.3 : DATA STRUCTURES AND ALGORITHMS

(2016 Admn onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

(Very short answer type)

Answer **all** questions. One word to maximum of one sentence.

1. What is Linear Search?
2. Define algorithm.
3. What do you mean by frequency count of an algorithm.
4. What is an array?
5. What do you mean by Space Complexity?
6. What is apriori algorithm?
7. Find Minimum  $\{O(k^2), O(\log k)\}$ .
8. How can we compare two algorithms?
9. What is pointer?
10. What is tree?

(10 × 1 = 10 Marks)

## SECTION – B

(Short answer)

Answer **any eight** questions. Each question carries **2** marks. Not exceed one paragraph.

11. What do you mean by Asymptotic Analysis?
12. What is Direct Recursion?
13. Differentiate push and pop operations.
14. What is data structure?
15. What is the procedure to remove an item from a Stack?
16. How can we insert an element into a Queue?
17. What do you know about Bubble Sort?
18. What do you know about Dequeue?
19. What is Binary Tree?
20. Write a short paragraph on Average Case and Best Case Complexities.
21. Explain the difference between one dimensional and multi- dimensional arrays.
22. Explain the concept of queue with the support of a diagram. **(8 × 2 = 16 Marks)**

## SECTION –C

(Short essay)

Answer **any six** questions. Each question carries **4** marks. Not exceed 120 words.

23. Explain the concept of pointer in detail with the support of an example.
24. Write the algorithm to demonstrate the insertion and deletion operations on a Circular Queue.

25. Explain in detail about the applications of Graph Theory.
26. Write an algorithm to merge two Singly Linked Lists into one list.
27. What are the important characteristics of an algorithm?
28. Write an algorithm to delete a node in the front of a Double Linked List.
29. Explain the applications of sets.
30. What are the important methods to Design an algorithm?
31. Write a paragraph on the application of Queue. **(6 × 4 = 24 Marks)**

SECTION – D

(Long essay)

Answer **any two** of the questions in about 300 words. Each question carries **15** marks.

32. Compare different sorting algorithms.
33. What are the different operations on Linked List? Explain.
34. What are the methods to analyze algorithm? Explain.
35. Explain (a) In Order Traversal, (b) Post Order Traversal, (c) Pre Order Traversal.

**(2 × 15 = 30 Marks)**