Reg. No. : ....

Name : ....

Fourth Semester B.Sc. Degree Examination, July 2018
FDP Under CBCSS
Complementary Course for Statistics and Mathematics
CS 1431.2/CS 1431.3
DATA STRUCTURES AND ALGORITHMS
(2016 Admn.)

Time : 3 Hours

Max. Marks : 80

SECTION – A
(Very Short Answer Type)

One word to maximum of **one** sentence, answer **all** questions :   (10×1=10 Marks)

1. What is data structure ?

2. What is stack ?

3. Define algorithm.

4. What is meant by tree traversal ?

5. What do you mean by Time Complexity ?

6. What is Binary Tree ?

7. Define a Graph.

8. What is queue ?

9. What is array ?

10. What is Maximum {O(N), O(log N)} ?

SECTION – B

(Short Answer)

Not exceed **one** paragraph, answer **any eight** questions. **Each** question carries
2 marks :   **(8×2=16 Marks)**

11. Define Big Oh notation.

12. What is Linear Search ?

13. Differentiate push and pop operations.

14. What is Recursion ?

15. What is the procedure to insert an item from a Stack ?

16. How can we delete an element into a Queue ?

17. Write a paragraph on the application of Queue.

18. What do you know about Selection Sort ?

19. What is Apriori Analysis of algorithm ?

20. Write a short paragraph on Best Case and Worst Case Complexities.

21. Explain the concept of multi-dimensional array with the support of a diagram.

22. How can we compare two algorithms ?

SECTION – C
(Short Essay)

Not exceed **120** words, answer **any six** questions. **Each** question carries 4 marks :
(6×4=24 Marks)

23. What are the important characteristics of an algorithm ?

24. Compare different sorting algorithms.

25. Explain :
    i) In Order Traversal,
    ii) Post Order Traversal.

26. Write a paragraph on the applications of Graph Theory.

27. What do you know about Dequeue ?

28. Write an algorithm to insert a node in the front of a Double Linked List.

29. Discuss the applications of graphs.

30. Explain different set operations.

31. Explain the concept of pointer in detail.

SECTION – D
(Long essay)

Answer **any two** of the questions in about **300** words. **Each** question carries **15** marks :　　　　　　　　　　　　　　　　　　　　　　**(2×15=30 Marks)**

32. What are the important methods to analyze algorithm ?

33. What are the different operations on doubly Linked List ? Explain.

34. Write the algorithm to demonstrate the insertion and deletion operations on a Circular Queue.

35. Develop an algorithm to locate the substring MAT from the string MATHEMATICS.

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