S.No. 1691 **12UCS04**

(For the candidates admitted from 2012–2013 onwards)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

Third Semester

Computer Science

DATA STRUCTURES AND ALGORITHMS

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define algorithm and write characteristics of an algorithm.

2. What do you mean by abstract data type? How will you represent abstract data type?

3. Define Array with example.

4. What are the ways to represent stack in the memory?

5. List out the various queue structures.

6. What is meant by linked list? List its types.

7. Define Binary tree.

8. What are called acyclic graph?

9. What is hash collision?

10. Define the term sorting and its methods.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Write the step by step procedure for problem solving.

Or

(b) Differentiate between abstract data type and primitive data structures?

12. (a) Discuss about array and its types.

Or

(b) Write down the algorithm for factorial calculation in stack.

13. (a) Explain Deque with example.

Or

(b) Discuss about circular double linked list.



14. (a) Explain about the operations on binary tree.

Or

(b) Brief note on Graph terminologies.

15. (a) Explain sequential search with an example.

Or

(b) What is insertion sort? Give a suitable example.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What do you mean by top down design? What are its advantages?

17. Define stack. What are the advantages and disadvantages of implementing a stack using an array or a linked list?

18. Explain about queue and its various structures.

19. Explain the graph traversal methods.

20. Define hashing. Explain different hashing techniques.

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