



ED-324

M.Sc. 1st Semester
Examination, March-April 2021

COMPUTER SCIENCE

Paper - III

Data Structure Through Algorithm Using 'C'

Time : Three Hours] [*Maximum Marks* : 100

Note : Answer any **two** parts from each question. All questions carry equal marks.

Unit-I

1. (a) What is Algorithm? Explain the time and space complexity of an algorithm with example.
- (b) What do you mean by Primitive and Composite data types? Explain with example.
- (a) Write short notes on the following topics :
 - (i) Control Structures
 - (ii) Algorithmic Notation
 - (iii) Mathematical Notation and functions

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(Turn Over)

(2)

Unit-II

2. (a) What is Bubble Sort? Arrange 50, 40, 10, 15, 5, 20, 35 in ascending order through bubble sort.
- (b) What are the types of searching techniques? Explain linear search with example.
- (c) Write short notes on any **three** of the following :
- (i) Parallel Array
 - (ii) Record
 - (iii) Pointer
 - (iv) Sparse Matrix

Unit-III

3. (a) What is a Queue? Explain the operation on the Circular Queue.
- (b) Write an algorithm for Quick Sort. Also find its complexity.
- (c) State the steps and convert the following expressions from infix to postfix notation :
- (i) $(A + B \uparrow D) / (E - F) + G$
 - (ii) $A*(B + D) / E - F*(G + H / K)$

(3)

Unit-IV

4. (a) What are the types of traversing a binary tree? Write the algorithm for any one traversal type.
- (b) What is heap sort? Write an algorithm to construct a heap sort? Explain with example.
- (c) What is Graph? Write an algorithm to find shortest path between any two nodes.

Unit-V

5. (a) What is Radix sort? Explain radix sort with the help of an example.
- (b) What is Sorting? Explain the procedure of insertion sort with an example.
- (c) How we arrange 35, 35, 65, 25, 55, 15, 85, 25 in ascending order through selection sort? Specify steps.
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