Roll No. ..... Total Pages : 03

BT-3/D-19 33132

DATA STRUCTURE AND ALGORITHMS
PC-CS201A

Time : Three Hours] [Maximum Marks : 75

Note : All questions in Part A and Part B are compulsory. Attempt any *four* questions from Part C selecting at least *one* question from each Unit.

Part A **15**

1. Answer the following questions : 5×3=15
   (i) Differentiate between linear and non-linear data structures.
   (ii) List the operations performed in splay tree.
   (iii) Write prefix and postfix expression for (A – B/C + D)/(A + B).
   (iv) State and *two* differences between static and dynamic memory allocation.
   (v) Write the application of Warshal algorithm.

Part B **20**

Unit I

2. Discuss the use of accumulator and counter in developing algorithm. **5**

Unit II

3. Write algorithm to delete element in stack. 5

Unit III

4. Write algorithm for insert an element from a linked list. 5

Unit IV

5. Write algorithm for insert an element in binary tree. 5

Part C 40

Unit I

6. Differentiate linear and binary search. Write algorithm for linear search. 10

7. Differentiate Insertion and radix sort with example. 10

Unit II

8. Derive equation to determine the time complexity of quick sort. 10

9. Differentiate doubly link list and circularly link list with example. 10

Unit III

10. Discuss the dynamic implementation of queue with example. **10**

11. Discuss the traversing of in single link list with example. **10**

Unit IV

12. Differentiate static and dynamic implementation of binary tree with example. **10**

13. Compare Prim's and Kruskal's algorithm with suitable example. **10**