Roll No. ....

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BT-3/D-20   43132

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 *one* question from each Unit.

Part A

1. Answer the following questions :   5×3=15

   (i) Differentiate non-primitive data structure with example.

   (ii) Write time complexities of Quick sort and Bubble sort.

   (iii) Differentiate Recursive and Non-recursive binary search.

   (iv) Give example of balanced multi way search trees.

   (v) Compare of linked and sequential storage representation.

Part B

2. Write various steps involved in designing and development of an algorithm.   5

3. Write algorithm to insert an element in stack.   5

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

5. Explain BFS in detail.   5

Part C

Unit I

6. Discuss various types of Array. Explain multi-dimensional array with example.   10

7. Differentiate bubble and radix sort with example.   10

Unit II

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

9. What are the applications of queue ? Write algorithm for priority queue.   10

Unit III

10. Discuss the concept of header link list. What are the applications of linked list ?   10

11. Discuss the dynamic implementation of stack with example.   10

Unit IV

12. Write properties of AVL tree. Make an AVL tree having elements 5, 10, 20, 30, 40, 45, 50, 60 and 70.   10

13. Explain B+ Tree and Threaded tree with example.   10