

OCTOBER 2013

**P/ID 17507/PCASG**

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Time : Three hours

Maximum : 100 marks

PART A — (6 × 5 = 30 marks)

Answer any SIX questions.

1. What is primitive datatypes? Explain
2. Write insertion and deletion algorithm for the circular linked lists.
3. Write deletion algorithm for a circular queue with examples
4. Explain spanning tree. List any three application.
5. Write algorithm for the breadth first search.
6. Explain sorting large objects. Why it is dealt separately than conventional approaches?
7. Discuss the merge sort algorithm with an example.
8. Explain Splay Trees with neat structure and example.

PART B — (7 × 10 = 70 marks)

Answer any SEVEN questions.

9. Explain the following with suitable example.
  - (a) Abstract Datatypes
  - (b) Asymptotic Notations
  - (c) Complexity Analysis
  - (d) Ordered lists.
10. Given an array A (1 : n), write an algorithm to produce the array Z (1 : n) such that  $Z(1) = A(n)$ ,  $Z(2) = A(n-1)$ , ...,  $Z(n-1) = A(2)$ ,  $Z(n) = A(1)$ . Use a minimal amount of storage.
11. How insertion and deletion of nodes takes place in a queue? How two different queues are merged? Write algorithms.
12. Discuss the evaluation of expressions using stack. Explain the algorithm for infix to postfix conversion.
13. Explain binary tree representation and how tree traversals are used in the conversion of expressions?

14. What is a graph? Explain the representation of a graph with its implementation. Write also the application of graph traversals.
  15. Explain sorting with tapes and disks.
  16. Discuss the quick sort algorithm with an example.
  17. Explain the following:
    - (a) Black Trees
    - (b) Hashing techniques for direct files
  18. Write a note on:
    - (a) Red and AVL Trees
    - (b) B-Trees.
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