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Question Paper Code: 33022

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Third Semester

Computer Science and Engineering

01UCS302 - DATA STRUCTURES

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Mention the applications of stack.
2. Differentiate: Linear data structures and Non-Linear data structures.
3. What are the various tasks performed while traversing a binary tree?
4. What is the purpose of splay tree?
5. Define: AVL Tree.
6. Mention the applications of B-tree.
7. What is meant by primary clustering?
8. What is the need for path compression?
9. Define the term: biconnectivity.
10. What is topological sort?

PART - B (5 x 16 = 80 Marks)

11. (a) Write an algorithm to merge two sorted linked lists into a single sorted list. (16)

Or

(b) What do you mean by doubly linked list? Write an algorithm for inserting and deleting an element from doubly linked list. Illustrate with example. (16)

12. (a) Explain the process of finding the minimum and maximum elements of binary search tree. (16)

Or

(b) Write an algorithm to insert an item into a binary search tree and trace the algorithm with the items : 6, 2, 8, 1, 4, 3, 5. (16)

13. (a) Write a procedure to implement single and double rotations while inserting nodes in an AVL tree with example. (16)

Or

(b) Explain the binary heap operations with examples. (16)

14. (a) Explain in detail the path compression techniques. (16)

Or

(b) Explain the smart union algorithm with example. (16)

15. (a) Explain with an example for breadth first and depth first search traversal of a graph. (16)

Or

(b) Write down the Digijkstra's algorithm to find the shortest path and explain it with an example. (16)
