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Question Paper Code: 31232

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. What is an abstract data type?
2. What is a doubly linked list?
3. Define depth and height of a tree.
4. Give the advantages and disadvantages of threaded binary trees.
5. List out structural properties of B-tree.
6. Define the height balanced tree: "AVL".
7. What is rehashing.
8. Identify the different properties of an equivalence relation in a set.
9. Briefly illustrate the adjacent matrix representation with an example.
10. What is bi-connectivity? Give an example.

PART - B (5 x 16 = 80 Marks)

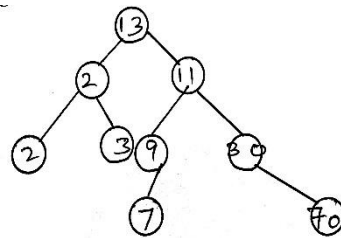
11. (a) (i) Implement an algorithm to polynomials represented as single linked list. (8)
(ii) Develop algorithm for inserting and deleting values from a queue. (8)

Or

- (b) Write algorithms for push and pop of a stack. Explain how stack is used for the evaluation of expression. Write appropriate algorithm. (16)
12. (a) What is a BST? Explain with suitable algorithms for insertion and deletion of nodes at different instances. Illustrate with suitable examples. (16)

Or

- (b) Write an ADT for inorder, preorder and postorder traversals. Traverse the given tree using inorder, preorder and postorder traversals. (16)



13. (a) Develop an algorithm to implement a splay tree. Validate the algorithm with a suitable example. (16)

Or

- (b) Explain the concept of insertion and deletion of elements from a MaxHeap. Illustrate with suitable algorithms. (16)
14. (a) Explain in detail the path compression techniques. (16)

Or

- (b) (i) How do collisions happen during hashing? Explain the different collision resolving techniques. (10)
- (ii) Explain about smart union algorithms in detail. (6)
15. (a) Explain the Dijkstra's algorithm to shortest path with suitable example. (16)

Or

- (b) Write short notes on: (i) Breadth first traversal and (ii) Euler circuits and applications. (16)