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**Question Paper Code : 21297**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Third Semester

Computer Science and Engineering

CS 2201/CS 33/10144 CS 302/080230007 — DATA STRUCTURES

(Regulation 2008 /2010)

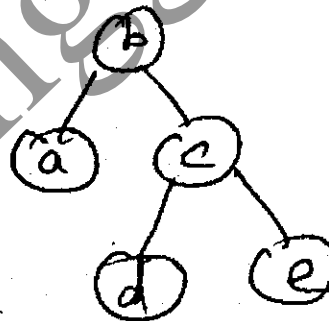
Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the advantages of linked list over arrays?
2. List the applications of stack.
3. Find the preorder traversal of the following tree.



4. What is the purpose of threaded binary tree?
5. Write the uses of splay tree.
6. Write the basic properties of B tree.
7. List the applications of set.
8. What is the basic difference between static hashing and dynamic hashing?
9. Define topological sort.
10. What is the purpose of Dijkstra's algorithm?

PART B — (5 × 16 = 80 marks)

11. (a) Write procedures to insert a node, delete a node, count and display nodes in doubly linked list. (16)

Or

- (b) Write algorithm to convert infix to postfix notation and prefix notation using stack. (16)

12. (a) (i) Write program to insert a node in a binary search tree. (8)

- (ii) Explain expression tree with an example. (8)

Or

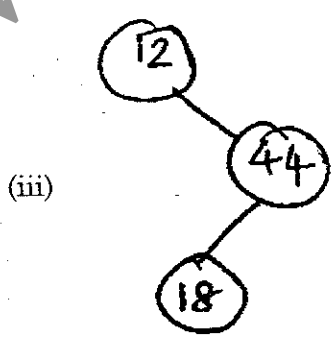
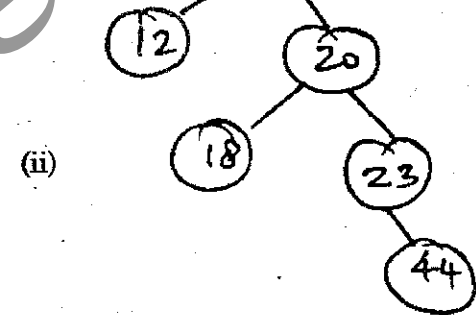
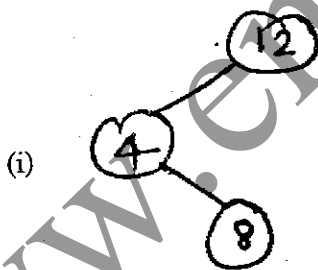
- (b) (i) Construct binary search tree to insert the following key elements. 23, 44, 18, 35, 20, 12, 52, 19, 38 and delete 44 from it. (10)

- (ii) Write algorithm to search a key from Binary search tree. (6)

13. (a) Construct B tree to insert the following key elements (consider order of the B tree is 3) 55, 4, 44, 3, 6, 7, 9, 45, 46, 56, 57.

Or

- (b) Construct AVL tree for the following after rotation. (4 + 8 + 4)



14. (a) Create extendible hash structure to insert the following key elements  
2, 3, 5, 7, 11, 17, 19, 23, 29, 31

Show the extendible hash structure for this file if the hash function is  $h(x) = x \bmod 8$  and buckets can hold three records.

Or

- (b) (i) Illustrate collision resolution methods in hashing. (8)  
(ii) Explain about different types of hash functions. (8)
15. (a) Write procedure to perform topological sort and explain.

Or

- (b) Construct minimum spanning tree for the following graph using Prim's and Kruskal's algorithm.

