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Reg. No. :

**Question Paper Code : 23373**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Computer Science and Engineering

CS 2201 — DATA STRUCTURES

(Regulations 2008)

(Common to PTCS2201 — Data Structures for B.E. (Part-Time) Third Semester —  
CSE — Regulations 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define ADT.
2. Write a C routine to deallocate the entire linked list.
3. Convert the expression  $((A + B) * C - (D - E) \wedge (F + G))$  into its equivalent Postfix notation.
4. Define a full binary tree. Give an example.
5. Write the uses of splay tree.
6. Write the basic properties of B tree.
7. What is meant by primary clustering?
8. Define open addressing hashing.
9. Define critical path.
10. What is weakly connected graph?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the insertion deletion and traversal operations in a circularly doubly linked list with suitable ADT's and examples. (16)

Or

- (b) (i) Write ADT operations for a linear queue using array implementation. (8)  
 (ii) Write functions to multiply two polynomials using linked list implementation. (8)

12. (a) List the different types of Tree Traversal. Develop an algorithm for traversing a Binary Tree. Validate the algorithm with a suitable example. (16)

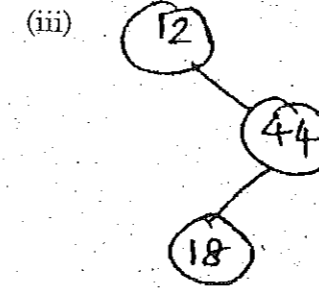
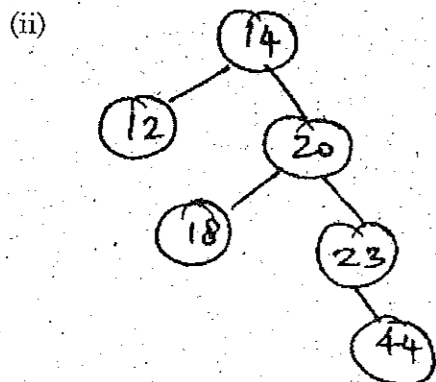
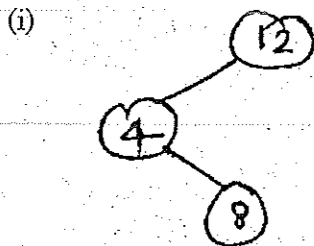
Or

- (b) Develop an algorithm to implement a Threaded Binary Tree. Validate the algorithm with a suitable example. (16)

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) (i) Briefly describe linear probing and quadratic probing collision resolution strategies. (8)  
 (ii) Discuss about the two permissible operations in the dynamic equivalence problem. (8)

Or

- (b) (i) Explain the algorithms which are associated with path compression. (8)  
 (ii) List the advantages and disadvantages of various collision resolution strategies. (8)

15. (a) (i) Explain the prim's algorithm with example. (8)  
 (ii) Explain topological sort with an example. (8)

Or

- (b) (i) Explain the Kruskal's algorithm with example. (8)  
 (ii) Explain the Dijkstra's algorithm with an example. (8)