

D 10834

(Pages : 2)

Name.....

Reg. No.....

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, JANUARY 2011

Computer Science

CSCI C02—ADVANCED DATA STRUCTURES

(2010 admissions)

Time : Three Hours

Maximum Weightage : 36

I. Answer all questions.

1. Define tree and binary tree.
2. Compare array and linked list.
3. Explain a problem where graph data structure can be used.
4. Define generalized list.
5. What are the features of a skip list ?
6. What is the purpose of reference count ?
7. Explain the significance of "hashing".
8. Differentiate between static hashing and dynamic hashing.
9. Define B-trees. Give example.
10. Define Red-Black tree. Give example.
11. Define binomial heap.
12. List and explain operations performed on a min pairing heap.

(12 x = 12)

II. Answer any six questions.

13. Write a function to merge two sorted singly linked lists.
(b) Explain any *one* graph representation.
14. (a) Write functions required to implement Queue data structure.
(b) Illustrate any *one* application of stack.
15. Discuss representation of a generalized list.
16. Write and explain a recursive function to find the depth of a list.
17. Explain the need and the process of rehashing.
18. Define splay tree. With example, explain splay rotation.
19. Define digital search tree and tries. Give applications and examples.

Turn over

20. State and explain the steps required to delete an arbitrary node from a F-heap.
21. List and explain properties of "leftist heap". Give suitable example and state any *one* advantage of it.

(6 x 2 = 12)

III. Answer any three questions.

22. (a) Explain breadth first and depth first search algorithms.
(b) Write a non-recursive function for inorder traversal of binary tree.
23. (a) With example explain "heterogeneous list".
(b) Write and explain a recursive function to delete a list.
24. Discuss in detail (a) Separate chaining and (b) Open addressing.
25. Discuss with suitable example :
- (a) Linear probing.
 - (b) Quadratic probing.
 - (c) Double hashing.
26. Write notes on :
- (a) AA trees.
 - (b) 2 – 3 trees.
 - (c) Treaps.
 - (d) k-d Trees.
27. Discuss in detail : "Binomial queues".

(3 x 4 =