

ANNA UNIVERSITY OF TECHNOLOGY, COIMBATORE.
B.E. / B.TECH. DEGREE EXAMINATIONS : NOV / DEC 2011
REGULATIONS : 2008
THIRD SEMESTER
080300003 - DATA STRUCTURES AND ALGORITHMS
(COMMON TO EEE / EIE / ICE)

Time : 3 Hours

Max.Marks : 100

PART - A

ANSWER ALL QUESTIONS

(10 x 2 = 20 MARKS)

1. Define: Doubly linked list.
2. Give any four applications of Circular queue.
3. Compare linear and non-linear data structures.
4. Define: binary tree, complete binary tree and full binary tree.
5. What is meant by height balanced tree?
6. What is meant by linear probing?
7. Give any four applications of spanning tree.
8. State: Optimality Principle.
9. What are the properties of dynamic programming?
10. Define: Big-O notation.

PART-B

ANSWER ALL QUESTIONS

(5 x 16 = 80 MARKS)

11. (a)(i) Write short notes on cursor based linked lists.
(ii) Write the insertion and deletion procedure for doubly linked list. Give a diagrammatic representation.

(OR)

11. (b)(i) Write the procedure for polynomial addition using linked list. Give an example.
(ii) Convert the following expression in to postfix using stack: $((a+b)*(c-d))/(a*e)$

12. (a)(i) Write the iterative procedure for inorder traversal.

- (ii) Construct the tree for the following traversal.

inorder = A B C D E F G H I
postorder = A C E D B H I G F

(OR)

- (b)(i) Explain expression trees with an example.

- (ii) Discuss Binary search tree in detail.

13. (a) Construct the B – tree for the following data: 10, 20, 12, 23, 34, 45, 56, 67, 67, 55, 66, 68, 44, 22, 11, 39, and 17.

(OR)

- (b) Explain Hashing techniques in detail.

14. (a)(i) Write short notes on topological sorting.

- (ii) Write the procedure for BFS traversal of a graph. Give an example.

(OR)

- (b)(i) Write the procedure for finding minimum spanning tree of a graph using Prim's algorithm. Explain with an example.

- (ii) Write short notes on Euler circuits.

15. (a)(i) Write short notes on divide and conquer method.
(ii) Sort the following numbers in ascending order using merge sort. 10, 20, 13, 14, 09, 08, 07, 05, 04, 01 and 22. Derive its time complexity.

(OR)

- (b)(i) Solve the following recurrence relation using master theorem
 $T(n) = 8T(n/2) + 1000n^2$
(ii) Explain greedy algorithms in detail. Give any four applications of greedy strategy.

*****THE END*****