

JUNE-2007

2007-HIMACHAL PRADESH UNIVERSITY
B.TECH III SEMESTER DEGREE EXAMINATION
DATA STRUCTURE AND ALGORITHM
(COMPUTER SCIENCE & ENGINEERING, INFORMATION TECHNOLOGY)

PAPER ID : IT-3003

TIME-3 HOUR
MARK-100

NOTE: ANSWER ALL QUESTIONS

SECTION-A[10*8=80]

1. What are the various measures of complexity of an algorithm? Discuss each of them with an example.
2. What is a Doubly link list? Write an algorithm for each of the operation possible on Doubly link list.
3. Giving a Binary tree T, write algorithm to
 - (a) Count the number of Non-leaf elements of T.
 - (b) Check if the tree is balanced.
4. What is a Binary search tree? Write the operation of insertion and deletion in a Binary search tree.
5. What are the various techniques for representation of a graph? Explain each of them with an example.
6. Explain the Dijkstra's algorithm to find the shortest distance in a weighted graph.
7. Explain the following searching algorithm with their complexity:
 - (i) Binary Search
 - (ii) Linear Search
8. Given an array: 17 8 2 3 6 12 14 1 15 How these will be sorted in the following:
 - (a) Radix sort.
 - (b) Selection sort.
 - (c) Bubble sort.

SECTION-B[10*2=20]

8. Attempt the following questions:
- (i) What is the complexity of insertion sort?
 - (ii) What is a Data Structure?
 - (iii) Convert $a^b \wedge c + d * e - f$ into postfix expression.
 - (iv) Define Heap.
 - (v) What is a Circular link list?
 - (vi) What is a B-tree?
 - (vii) What is a height of a balanced tree?
 - (viii) What is an AVL tree?
 - (ix) How a node is represented in C?
 - (x) How an element is searched in singly link list?