[Nov-14]

[EURCS-304A]
B.Tech. Degree Examination

Computer Science & Engineering
III SEMESTER

DATA STRUCTURES

(Effective from the admitted batch 2012–13)

Time: 3 Hours **Max.Marks: 60**

Instructions: Each Unit carries 12 marks.
Answer all units choosing one question from each unit.
All parts of the unit must be answered in one place only.
Figures in the right hand margin indicate marks allotted.

UNIT-I

1. What is a Sparse Matrix? How the sparse matrix is represented using a Single Linear List? Explain it with an example 12

OR

2. a) Discuss the components of Time Complexity 6
   b) Is it possible to generate a pointer to the first element of an array in C++? Support your statement with an example 6

UNIT-II

3. Write a C++ program for searching a circular linked list that has a header node 12

OR

4. a) Write a C++ program for popping an element from a linked queue 6
   b) Discuss any one application of queue and write its implementation 6

UNIT-III

5. Write the Pseudo code for Abstract data type of binary tree. Write an algorithm to determine the height of a binary tree 12

OR

6. What are the steps to be followed to insert an element in to AVL tree? Explain it with an example 12

UNIT-IV

7. Write an algorithm for Binary Search? What are the implementation issues of binary search? 12

OR

8. a) Compare the differences between Linear search and Fibonacci search 6

   b) Find the number and position of 36in the array given below by using Binary Search

   2,6,9,10,13,17,32,35,36,58,76,92 6

UNIT-V

9. a) Sort the following sequence by using Merge Sort

   88,74,98,54,67,32,34,56,90 6

   b) Write an Algorithm for implementing Shell sort 6

OR

10. Write an algorithm for radix sort. Discuss Worst case space complexity of Radix sort 12