[Nov-15]

[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. a) What is an array? Compare and contrast array with lists 6
   b) What is indirect addressing? Explain with a suitable example 6

OR

2. a) Distinguish between linear data structures and non-linear data structures 6
   b) What is an Array? Explain two and three dimensional arrays with examples. Explain indirect addressing 6

UNIT-II

3. a) Briefly discuss about the applications of Towers of Hanoi 6
   b) What is Stack ADT? Write the applications of Stack and Queue 6

OR

4. Define Queue. Write algorithms for array and linked representation of Queue operations 12

UNIT-III

5. a) Discuss briefly about the representation of binary trees 6
   b) State and explain all binary tree traversals 6

OR

6. Define and explain the following with an example
   a) AVL Tree b) Binary Trees c) B+ Trees 12

UNIT-IV

7. a) Discuss the complexity analysis of various sorting algorithms 6
   b) Discuss various types of Hashing Techniques 6

OR

8. Write a program for Quick Sort with an example. Show that the average case time complexity of Quick sort is O(nlogn) 12

UNIT-V

9. a) What is Radix Sort? Explain it with an example 6
   b) Compare the Best, Average and Worst case time complexity of the following
      i) Bubble Sort ii) Bucket Sort iii) Heap Sort 6

OR

10. Write a C++ program to implement Quick Sort and Sort the following numbers by using Quick sort 46, 56, 47, 11 76, 69, 22, 27, 26 12