Exam.Code:0029
Sub. Code: 0934

1127

Bachelor of Computer Applications
Third Semester
BCA-302: Data Structure
(Old Syllabus)

Time allowed: 3 Hours | Max. Marks: 90

NOTE: *Attempt five questions in all, including Question No. IX (Unit-V) which is compulsory and selecting one question each from Unit- I-IV.*

x-x-x

UNIT – I

I. What are stacks and queues? How are they stored in memory? How do you perform the basic operations like inserting and deleting an element from a stack and queue? Describe these operations with help of algorithm. (18)

II. What are arrays? How are one and multidimensional arrays stored in memory? Write algorithms to add and delete an element in the beginning, middle and end of an array. (18)

UNIT – II

III. Describe the following linked list operations with help of algorithm: Traversal, creation, insertion and deletion. (18)

IV. Write notes: Circular Link List, Memory Representation of Doubly link list and Polynomial Manipulation. (18)

UNIT – III

V. What is a Binary tree? How is it represented in memory? Discuss with help of algorithm the various ways to traverse a Binary Tree. (18)

VI. a) Write algorithm to insert and delete a node in a Binary tree.
b) Write short notes on Binary Search tree and AVL Trees. (18)

UNIT – IV

VII. Discuss with help of example and algorithm insertion and selection sort techniques. (18)

VIII. Write an algorithm for Quick sort and also trace the quick sort algorithm step by step on following input elements:

81,97,13,42,64,52,99,101,2,83,61 (18)

UNIT – V

IX. Attempt the following:-

a) What is a data structure?
b) What is garbage collection? Why is it essential?
c) What is a circular queue?
d) What are applications of array?
e) What are applications of Linked list?
f) What is a leaf node?
g) What do you understand by time complexity?
h) What is complexity of Shell sort and Radix sort?
i) Compare linear and binary search techniques. (9x2)

x-x-x