Second Year Examination of the
Three Year Degree Course, 2001

(Faculty of science)

COMPUTER SCIENCE

Paper-III

(Data Structure Using Pascal)

Time : 3 Hours

[Maximum Marks :50]

Attempt any **five** questions,
selecting at least **one** question from each unit,
All questions carry equal marks.

UNIT-I

1. (a) Compare Stack with Queue structure and also list their applications.
(b) Write two functions Push and Pop for adding and removing an element from the Stack.
2. (a) Explain how circular queue is a better structure compared to linear queue.
(b) Write a procedure to print the largest increasing sequence from the given N numbers.

UNIT-II

3. (a) What do you understand by linked list? Compare its advantages and disadvantages with respect to array.
(b) Write two functions for a linked list for creating a new node and releasing a node.
4. (a) Draw the structure of a doubly linked list and explain the utility of head node.
(b) Assume you are given a sorted doubly linked list. Write two procedures to print the values in ascending and descending order.

UNIT-III

5. (a) Draw a Binary Search Tree if the following values are added in an empty tree.:

30,50,80,40,90,20,10,70,60.

(b) Write the output of the pre-order, in-order and post-order traversal of the above tree created in (a).

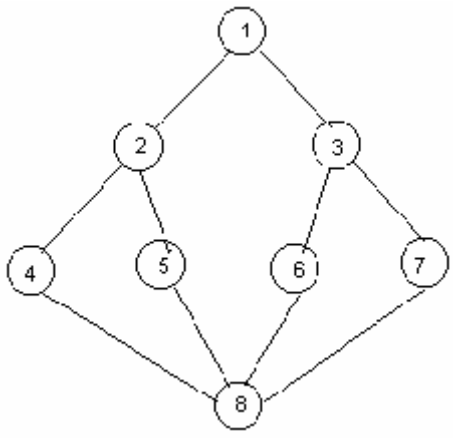
6. (a) Write a function to find the successor of a node in a binary search.

(b) Write a function to count number of nodes in a binary search tree.

UNIT-IV

7. (a) Show the representation of the following graph using adjacency matrix and adjacency list:

(b) Write an algorithm to determine whether the graph is connected.



8. Write the algorithm to determine shortest path (distances) from one source to all destinations and explain it by taking an example.

UNIT-V

9. (a) Compare various searching methods.

(b) Write a resucursive function for binary search.

10. Write the algorithm of heap sort and explain it with the help of an example. What is its efficiency?