BACHELOR IN COMPUTER APPLICATIONS

Term-End Examination

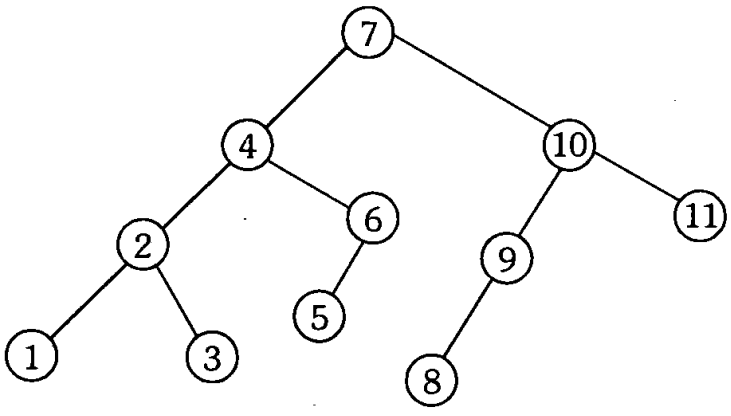
June, 2006

CS-62 Ⓢ : 'C' PROGRAMMING AND DATA STRUCTURE

Time : 2 hours *Maximum Marks : 60*

Note : *Question no. 1 is **compulsory**. Answer any **three** questions from the rest. All algorithms should be written nearer to 'C' language.*

1. (a) Write a non-recursive function to traverse a tree in postorder. Apply the function on the following tree. *10*



(b) How is a graph represented by an adjacency matrix ? Write any two drawbacks of such a representation. *5*

(c) Give any two differences between binary search and linear search. Also, write a function to implement the binary search algorithm. Show the output of the algorithm using an example. *10*

(d) Write five differences between Sequential file organisation and Direct file organisation. *5*

2. (a) Write an algorithm to evaluate a Postfix expression by using a stack. Illustrate the working of this algorithm with a suitable example. *7*

(b) Compare the Best and Worst case complexities of Merge Sort, Quick Sort and the Bubble Sort algorithms. *3*

3. (a) Write a program in C to sort a single linked list. Also convert the sorted linked list into a circular linked list. *7*

(b) Define the following terms : *3*

(i) Spanning tree

(ii) Weakly connected graph

(iii) B-Tree

4. (a) Define a circular queue. Write an algorithm to implement the insertion and deletion operations in a circular queue. *7*

(b) Give any two differences between 'Call by value' and 'Call by reference' methods. Also, give an example for each method. *3*

5. Explain the following, with an example of each : *10*

(i) L value

(ii) Heap

(iii) Height-balanced-tree

(iv) Garbage collection

(v) Row major order