Total No. of printed pages = 3

DATA STRUCTURE USING C

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No.1 and any *four* from the rest.

1. (a) What do you mean by best case, average case and worst case complexity ? Explain with the help of linear search algorithm.   4+3=7

   (b) What is the minimum and maximum height of a binary search tree ?   3

2. (a) Differentiate between linear search and binary search.   5

   (b) Write an algorithm to perform binary search.   8

   (c) What is the complexity of binary search ?   2

[Turn over

3. (a) Differentiate between singly and doubly link list. 5

   (b) Write an algorithm to insert an element at the beginning of a singly link list. 7

   (c) What are the advantages of a circular link list ? 3

4. Define stack. Write algorithms to implement a stack using array. (push, pop and stackempty). 3+12=15

5. (a) List the demerits of linear queue. 3

   (b) Write functions to implement circular queue using array. 12

6. (a) Differentiate between strictly and complete binary tree. 3

   (b) List the properties of binary search tree. 4

   (c) Write a function to insert an element in a binary search tree. 8

7. (a) Write an algorithm to implement insertion sort. 8

   (b) Illustrate the steps of execution of bubble sort for the following array : 7

   10   2   5   7   9

8. Write short notes on : 5×3=15

   (a) Collision resolution technique in hashing.

   (b) Binary tree traversal.

   (c) Representation of graph in computer memory.