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 complexity of an algorithm ? List different types of algorithm complexities. 2

   (b) What is a sparse matrix ? Give example. 2

   (c) What is a Heap ? Give example. 2

   (d) What is hashing ? Give an example of hash function. 2

   (e) Write two Graph traversal methods. 2

[Turn over

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

(b) Write an algorithm to perform binary search. 5+10=15

3. (a) What is the advantage of a link list ? Write function to insert an element in a linklist. 2+8=10

(b) Write a function to search an element in a link list. 5

4. Define stack. Write push and pop function for implementing a stack in an array. 3+6+6=15

5. (a) Create a binary tree

Given

Inorder : B C A E G D H F I J
Preorder : A B C D E G F H I J

(Show all steps). 8

(b) Write the properties of a BST. Give an example of BST. 7

6. (a) Write an algorithm to perform insertion sort.

                                            7

    (b) Write an algorithm to perform quick sort.

                                            8

7. Write short notes on any *two* : $7.5 \times 2 = 15$

    (a) Representation of Graph in computer memory

    (b) Queue

    (c) Circular link list

    (d) Pattern matching algorithm.