KNT/KW/16/5130

Bachelor of Science (B.Sc.) Semester—III (C.B.S.) Examination

COMPUTER SCIENCE (Data Structures)

Paper—I

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Illustrate your answers with suitable diagram wherever necessary.

EITHER

1. (A) Explain the representation of single linked list in memory. 5

(B) Write an algorithm to delete the last node of double linked list. 5

OR

(C) Write an algorithm to insert a node at the end in single linked list. 5

(D) Explain the memory representation of double linked list. 5

EITHER

2. (A) What is stack ? Explain the representation of stack in memory. 5

(B) Convert following infix expression into prefix and post fix expression :

A ↑ B * C – D + E / F / (G + H). 5

OR

(C) Write a recursive algorithm to find the factorial of a number. 5

(D) Write an algorithm for evaluating the postfix expression. 5

EITHER

3. (A) Write an algorithm to insert an element in a circular queue. 5

(B) Explain Insertion Sort Method with a suitable example. 5

OR

(C) Explain Hashing technique. 5

(D) Explain Selection Sort Method with a suitable example. 5

EITHER

4. (A) Given preorder : E A C K F H D B G

Inorder : F A E K C D H G B

Draw the Tree T. 5

(B) Explain linked list representation of graph in memory. 5

OR

(C) Write an algorithm for searching an element in binary search tree. 5

(D) Explain DFS Traversal method of graph. 5

EITHER

5. (A) Explain Header linked list with example. 2½

(B) Explain underflow and overflow condition in stack. 2½

OR

(C) Explain priority queue in short. 2½

(D) Define the following terms with respect to tree :

(i) Root

(ii) Degree

(iii) Sibling. 2½