1019
B.E. (Information Technology)
Fourth Semester
ITE-441: Data Structures and Algorithms
(Common for IT 421)

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt _five_ questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I.   Attempt the following:-

   a) What is an army? Discuss its types.

   b) Define the priority queue.

   c) What are h-trees?

   d) What is meant by circular linked list?

   e) Define the time and space complexity.   (5x2)

UNIT – I

II.   What are data structures? Explain various types of data structures in detail.   (10)

III. Write an algorithm to convert infix to postfix notations. Also find the postfix equivalent of the following expression:
   A*(B+C)*D
                                                                    (10)

IV. What is linked list? How it can be represented in memory? Write an algorithm to delete a node following a given node from linked list.   (10)

UNIT – II

V.   What is binary search tree? Write an algorithm for deleting an item from binary search tree. Also discuss their different cases   (10)

VI. Define graph. Explain the breadth first traversal of a graph by giving a suitable example.   (10)

VII. Write short notes on the following:-
   a) Threaded binary tree.
   b) Linked representation of graph   (5,5)

x-x-x