B.Tech Degree IV Semester Examination April 2012

IT/CS 405 DATA STRUCTURES AND ALGORITHMS
(2006 Scheme)

Time: 3 Hours   Maximum Marks: 100

PART A
(Answer *ALL* questions)
$(8 \times 5 = 40)$

I.   (a)   What is spare matrix? How is it represented?
      (b)   Compare an array and a linked list.
      (c)   Write short notes on:
               (i)   Queue
               (ii)   Dqueue
      (d)   Explain the role of stack in postfix evaluation.
      (e)   Write the recursive algorithm for pre-order tree traversals.
      (f)   Write short notes on:
               (i)   Directed acyclic graph
               (ii)   Connected graph.
      (g)   Give an applications of Dqueue
      (h)   Write short notes on:
               (i)   AVL trees
               (ii)   Threaded binary tree

PART B
$(4 \times 15 = 60)$

II.   Explain merge sort with example.
OR
III.   Distinguish between insertion sort and selection sort.

IV.   Why queue is implemented as circular queue? Specify conditions for empty and full queue?
OR
V.   Write a java program to convert infix expression to postfix expression.

VI.   Explain (i) Insertion (ii) Deletion (iii) Searching, in a binary search tree with appropriate diagrams.
OR
VII.   Define AVL tree and explain the rotations for AVL trees.

VIII.   Explain Prims and Kruskal algorithms to find minimum spanning tree.
OR
IX.   Define B-tree. Explain the structure of B-tree with example.

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