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CST-103

Advanced Diploma in Information Technology (ADIT) / Bachelor in Information Technology (BIT)

00387

Term-End Examination
June, 2010

CST-103 : DATA STRUCTURES AND ALGORITHMS

Time : 2 hours *Maximum Marks : 50*

Note : *There are **two** sections in this paper. All questions in **section-A** are **compulsory**. Answer **any two** questions from **section-B**.*

SECTION - A

1. State ***True / False*** for the following statements : **5x1=5**

(a) Stacks follow FIFO principle

(b) Circularly linked lists occupy larger memory than singly linked lists

(c) The process of execution of a recursive algorithm leads to the creation of a stack

(d) BFS can be performed only on diagraphs

(e) The time complexity of a Quicksort algorithm is O (n log n)

2. What datastructure is suitable to represent a Matrix ? Justify your answer with example. 8

3. (a) Using a stack, convert the following infix expression into prefix expression : 6

$((a*b)/(c+d))+(e*f)$

(b) Write an algorithm for implementation of a Queue. 7

SECTION - B

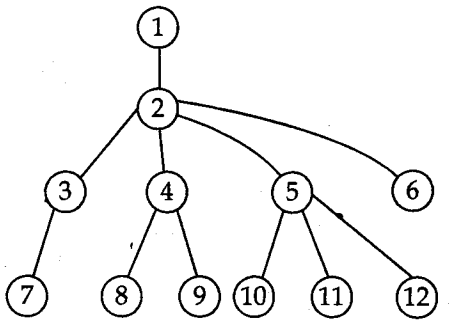
Answer ***any two*** questions from this section :

4. (a) Write an algorithm to implement Bubble sort **6**

   (b) Sort the following list of elements using insertion sort or quick sort. Clearly showing steps of execution. 10, 2, 15, 3, 26, 5, 32, 8. **6**

5. (a) Write algorithms for preorder, inorder and postorder traversals of a Binary Tree. **6**

   (b) Convert the following tree to Binary tree : **6**



6. (a) Write the algorithm for DFS. **6**

   (b) Traverse the following graph using BFS : **6**