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CST-103

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

Term-End Examination
December, 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) Queues follow FIFO principle.

(b) Doubly Linked Lists occupy larger memory than Singly Linked Lists.

(c) Tree and Binary Tree are synonyms.

(d) DFS can be performed only on digraphs.

(e) A Record can consist of fields of different types.

2. What data structure is suitable to represent a Polynomial ? Justify your answer. 8

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

$(a+b)/(a-b*c)$

(b) What is Linear Search ? What is Binary Search ? What are advantages and disadvantages of using Linear Search ? 7

SECTION - B

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

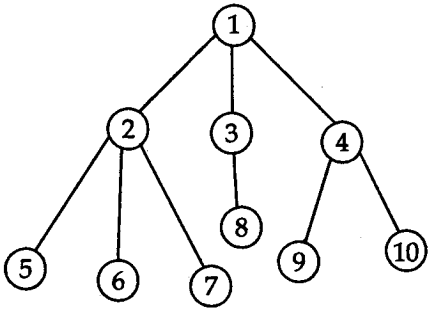
4. (a) Write an algorithm to implement Quick Sort. 6

   (b) Sort the following list of elements using bubble sort or insertion sort, clearly showing steps of execution. 6

   5, 1, 8, 7, 26, 34, 2

5. (a) Explain the process of converting a Tree to Binary Tree. 6

   (b) Convert the following Tree to Binary Tree. 6



6. (a) Write the algorithm for BFS. 6

   (b) Traverse the following graph using DFS. 6