14IT3303

II/IV B.Tech. DEGREE EXAMINATION, MAY, 2016

Third Semester

INFORMATION TECHNOLOGY

DATA STRUCTURES

Time: 3hours   *Max. Marks: 70*

Part-A is compulsory

Answer One Question from each Unit of Part-B

PART-A

10 x 1 = 10M

1. a. Define Data Abstraction.

    b. List the applications of Stack.

    c. Define a Binary Search Tree.

    d. Define a Max Heap.

    e. List the graph representations.

    f. Define Space Complexity.

    g. Difference between Binary Tree and Binary Search Tree.

    h. What is the basic difference between linear search and binary search?

    i. What is the order of preorder traversal?

    j. Compare and contrast Rehashing and Extendable Hashing.

PART-B

4 x 15 = 60M

UNIT-I

2. a. Explain briefly about the Towers of Hanoi Problem. **7M**

   b. Define Singly Linked List. Explain briefly about Single Linked List operations. **8M**

   (or)

3. a. Write a C program to implement stacks using linked list. **8M**

   b. Write a procedure to convert an expression from infix to postfix. **7M**

UNIT-II

4. a. Explain briefly about the Insertion and Deletion operations of Double Linked list with examples. **9M**

   b. List the properties of Binary Tree and explain briefly about the representations of Binary Tree. **6M**

   (or)

5. a. Explain about the Searching and Insertion operations of Binary Search Tree. **8M**

   b. Create a Binary Search Tree by inserting 56, 78, 76, 87, 90, 45, 34, 52, 12, 67. **7M**

UNIT-III

6. a. Define an AVL Tree. Explain briefly about the Rotations of an AVL Tree. **10M**

   b. Write a C program to insertion an element into Max Heap. **5M**

   (or)

7. a. Define B Trees and describe briefly about the insertion and deletion operations of B Trees. **10M**

   b. Write short notes on M-way Search Trees. **5M**

UNIT-IV

8. a. Write a C Program to implement Depth First Search. **8M**

   b. Explain procedure to implement Quick Sort with an example. **7M**

   (or)

9. a. Write a C program to implement a Binary search. **8M**

   b. Explain briefly about Extendable Hashing. **7M**

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