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BMS College of Engineering, Bengaluru-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

January 2016 Semester End Make Up Examinations

Course: Data Structures **Duration: 3 Hours**
Course Code: 15CS3DCDST **Max Marks: 100**
Date: 19.01.2016

Instruction: Answer any five full questions choosing one from each unit.

UNIT-I

1.	a)	What is a stack? Evaluate the following postfix expression using stacks XYZ^^M-N+PQ/ .	**07**
	b)	Implement the program for GCD using recursion. Also trace the program for a specific example.	**06**
	c)	What is a queue? Implement the basic operations of a linear queue using arrays.	**07**

UNIT-II

2.	a)	Design a program to insert new node at the beginning , at middle position and at the end of a single linked list.	**12**
	b)	Two linked lists contain information of the same type in ascending order. Write a program to merge them in a single linked list.	**08**

OR

3.	a)	Represent the insertion of a new node to a doubly linked list diagrammatically and give the sequence of changing pointers.	**05**
	b)	Develop a function to delete a given node from a doubly linked list.	**07**
	c)	Design a program to reverse a singly linked list.	**08**

UNIT-III

4.	a)	What is BST? Explain insertion and deletion of nodes at different instances with suitable example.	**08**
	b)	Develop recursive procedures for various Binary Search Tree traversals mechanism.	**08**
	c)	Explain Binary Trees. Explain the different representations of binary tree?	**04**

UNIT-IV

5.	a)	What is AVL trees? Explain the imbalance after inserting a node into an AVL with an example.	**06**
	b)	What is binomial heaps? List the properties of binomial heap and binomial trees.	**08**
	c)	Explain structure of Fibonacci heaps.	**06**

OR

6.	a)	Explain in-order right thread binary tree with an example.	**06**
	b)	Explain Huffman tree with an example.	**08**
	c)	List the properties of red-black trees.	**06**

UNIT-V

7.	a)	Demonstrate and explain the algorithm for sorting by counting for the given data: 11, 27, 8, 69, 43.	**07**
	b)	Implement binary search algorithm using recursion.	**05**
	c)	Illustrate with an example how collision is resolved in a hash table using separate chaining and double hashing.	**08**

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