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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

July / August 2017 Supplementary Semester Examinations

Course: Data Structures — Duration: **3 hrs**
Course Code: 15CS3DCDST — Max Marks: **100**

Date: 25.07.2017

Instructions: **1.Answer any five full questions choosing one from each unit.**
2. Assume missing data (if any) suitably

UNIT 1

1	**a)**	Write an algorithm for evaluating a valid postfix expression. Show the stack trace on A B + C – B A + C ^ - for given values A=1, B=2, C=3	**10**
	b)	Explain array implementation of the Circular Queue and Write the CQINSERT routine	**10**

UNIT 2

2	**a)**	Write a function to implement the following on a singly linked list (i) To find the average of set of values (ii) To replace all the occurrences of a given value by other value in a list.	**10**
	b)	List the different types of linked lists. Write a C function to count number of elements present in single linked list.	**10**

OR

3	**a)**	Discuss the advantages of doubly linked list over singly linked list. Design a C function that will insert a given integer value into an sorted doubly linked list.	**10**
	b)	Write a C Program to add 2 polynomials containing 2 variables using single linked list.	**10**

UNIT 3

4	**a)**	Write a C function for the various tree traversal techniques.	**10**
	b)	Develop a function for constructing a binary search tree. While constructing the tree take care that duplicate values are not added. Trace the function on 8, 13, 10,12,6,9,5,2	**10**

UNIT 4

5	**a)**	Define Threaded binary tree. Discuss the different types of threaded binary tree with a function.	**10**
	b)	Show the B-tree that results when inserting R,Y,F,X,A,M,C,D,E,T,H,V,L,W,G (in that order) branching factor of t = 3. You need to only draw the trees just before and after each split	**10**

OR

6	**a)**	Construct an AVL tree for the following sequence of integers, starting with an empty Tree: 10, 20, 15, 25, 30, 16, 18, and 19 and show the tree after deleting an element 30 from the tree.	**10**
	b)	Discuss the properties that are to be followed in identification of B-Tree.	**10**

UNIT 5

7	**a)**	Discuss the working of a Radix sort with an example and write a C function to arrange numbers in Ascending order using Radix Sort.	**10**
	b)	Define Hashing technique. Discuss various methods used for resolving hash collisions.	**10**

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