

U.S.N.

--	--	--	--	--	--	--	--	--	--

BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)
July / August 2014 Supplementary Examinations

Course: **DATA STRUCTURES**

Course Code: **09CI3GCDSL**

Duration: **3 Hours**

Max Marks: **100**

Date: 03.08.2014

Instructions: **Answer FIVE FULL questions, choosing one from each unit.**

UNIT -1

1. a) What is Structure? Write a C program to initialize and access structures. 06 Marks
- b) Explain different memory allocation techniques. 04 Marks
- c) Write an algorithm / C code to insert a new node at the front of a Singly Linked List and delete a node from the rear end of the Singly Linked List, and also display the contents of the Singly Linked List. 10 Marks

OR

2. a) Write a C program to implement insert and delete operations at rear end in a Circular Singly Linked List with header node. 10 Marks
- b) What are the drawbacks of a Singly Linked List? How these are eliminated in Circular Singly Linked List and Doubly Linked List? 04 Marks
- c) In a Doubly Linked List, write a C function to insert a new node to the left of the node whose key value is read as an input. 06 Marks

UNIT-2

3. a) Write a C program to add two long integers using doubly linked list. 10 Marks
- b) Write a C program to merge the two lists and reverse a resultant list in place. 10 Marks

OR

4. a) Explain the different operations on file with an example. 10 Marks
- b) Write a C program to randomly access the data from a file. 10 Marks

UNIT-3

5. a) Write a C program to implement stack using array. 08 Marks
- b) Write the prefix and postfix form of the following infix expression 08 Marks
 - i) $((A+B) * C - (D-E)) \$ (F + G)$
 - ii) $A \$ B \$ C - M + N + P / Q$
- c) Explain Tower of Hanoi with an example. Write a recursive procedure for the same. 04 Marks

UNIT-4

6. a) Write a C program to implement Circular Queue operations using an array. 08 Marks
- b) Write a C program using dynamic variables to implement QUEUE of strings using singly linked list to perform insertion, deletion and display operations. 08 Marks
- c) How priority queues are implemented using linked lists? Explain along with an advantage of using list over arrays for implementing priority queues. 04 Marks

UNIT-5

7. a) For the following tree traversal construct the tree 04 Marks
Inorder: B C A E G D H F I J
Preorder: A B C D E G F H I J
- b) Write C function to construct a binary search tree. While constructing the tree take care that duplicate values are not added. 08 Marks
- c) Write C function for deleting a node in a binary search tree. 08 Marks
