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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

March 2014 Semester End Make Up Examinations

Course: **DATA STRUCTURES**

Course Code: **09CI3GCDSL**

Duration: **3 Hours**

Max Marks: **100**

Date: 06.03.2014

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

UNIT -1

1. a) What do you mean by dynamic memory allocation ? Mention the different functions used for this. Explain the function that is used for allocating the required size of memory, with example. 10 Marks

- b) What is the output of this program 10 Marks

```
#include <stdio.h>
void do_something(char *S)
{
    if (*S!=NULL)
    {
        do_something(++S);
        putchar(*(--S));
    }
}
main()
{
    char S[20]="BMSCollege";

    do_something(S);
    getch();
}
```

OR

2. a) What are the advantages and disadvantages of linked lists over arrays. 04 Marks
- b) Write C routine to 08 Marks
- i. Insert an element at the front of the singly linked list.
- ii. Delete a given element from a singly linked list.
- c) Write C function to insert an element before a given element in a doubly linked list. 08 Marks

UNIT-2

3. a) Write a C program to add two polynomials. 10 Marks
b) Write a C program to sort given n numbers using Bubble sort. 10 Marks

OR

4. a) Explain any five different operations that can be performed on Files. 05 Marks
b) What are command line arguments? Write a C program to illustrate command line arguments. 06 Marks
c) Write a C program to implement Binary search technique. Trace the program by taking 6 integer numbers as input. 09 Marks

UNIT-3

5. a) Define a stack. Explain the operations of stack with code snippet. 06 Marks
b) Obtain the postfix and prefix expression for $((A + (B - C) * D) ^ E) +$ 06 Marks
c) Write a C function to search an element using recursion binary search. Show the contents of stack for function call. 08 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
