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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)
December 2012/January 2013 Make up Examinations

Course: Data Structures
Course code : 09CI3GCDSL

Duration: 3 hours
Max Marks: 100
01.02.2013

Instructions: Answer one full question from each Unit.

UNIT – I

1. a) Distinguish between the following: 10
        i) (*m)[5] and *m[5]
        ii)int(*ptr) ( ) and int *ptr( )
        iii) Call by value and Call by references.
        iv). Linear data structure and non linear data structure
    b) Write a C program to support the following operations on a doubly linked list 10
        where each node consists of integers.
        i.   Create a doubly linked list by adding each node at the front.
        ii. Insert a new node to the left of the node whose key value is read as an input.
        iii.   Display the contents of the list.

OR

2   a) Develop C function for the following operations. 10
        i. To add two complex numbers represent the complex number using structure.
        ii. To find the avg , max, min and sum of n elements in an array passed as an
        arguments
    b) Explain various Dynamic memory allocations with examples 6
    c) What is a circular list? What are the advantages of circular linked list over a 4
        linear lists ?

UNIT – II

3. a) Write about the fseek and ftell functions in files. 4
    b) What are command line arguments? Give an example program to explain the 6
        same.
    c) Write a program that merges two given lists (Linear Linked Lists). Also 10
        implement a linear search to search for an element in the merged list

OR

4. a) Write a program which creates a file STUDENT.DAT where the records hold 10
        the details of a student as studno, studname, marks in 3 subjects. Create n

records and display the details of the students along with total marks. Also display the name of the topper.

b) Write the algorithm for the following: 10
    1. Evaluation of polynomial
    2. Insertion sort
    Trace the same with examples.

UNIT – III

5. a) Convert the following infix/suffix expression to suffix/infix expression: 8
    i) A+ (((B-C)*(D-E) +F) /G) * (H-J)
    ii) (((A+B)* (C-D) $ E)*F)
    iii) ABCDE-+$*EF*-
    iv) AB-C+DEF-+$

b) State clearly the problem of 'Tower of Hanoi' and write a C function to solve this problem for 3 disks using the technique of recursion.   3+2+3

c) Write a C program to reverse the continents of a Stack.   4

UNIT – IV

6. a) Write any 4 applications of queues   4

b) Write a program implementing double ended queue using pointers. Include the functions –to insert in the front end, delete from the rear end and display the entire queue.   8

c) Write an algorithm to create, insert and delete elements in a circular queue   8

UNIT-V

7. a) Write an algorithm to insert an item into a binary search tree (no duplicates items are allowed)   6

b) Explain the threaded binary tree with an example   6

c) Write a program to obtain the sum of contents of all the nodes in a given binary of integers   8

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