Reg No.									

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THIRD SEMESTER B.E. (CSE) DEGREE END SEMESTER EXAMINATION
NOV./DEC. 2011
DATA STRUCTURES USING C-(CSE207)
DATE: 02-12-2011

TIME: 3 HOURS MAX.MARKS: 50

Instructions to Candidates

- Answer **any five** full questions.
- Write question numbers clearly. Missing data suitably assume

1A) Write a complete code to implement quicksort. For the following set of numbers show how partition is carried out upto second level.

10 20 9 19 5 11 2

1B) Explain with proper syntax the four memory management functions. (6+4)

2A) Given the following expression show the conversion of infix to postfix using a table with headings, symbol to be scanned, the postfix string and the stack contents.

((A - (B + C)) * D) $ (E + F)

2B) Explain how is hashing useful. Explain the four hashing functions used in static hashing with example.

2C) Write functions to check if the queue is full or empty without using the counter variable in a circular queue. The function takes the address of the queue structure as the parameter and returns the status of the queue. Show the initialization parameters. (3+5+2)

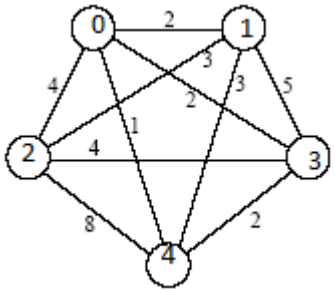
3A) Given the INORDER as **D J L K E B A F H I G C** and
POSTORDER as **L K J E D B I H G F C A** construct the binary tree showing how it is constructed in each step

B) Write function which computes the height of a given tree by taking the node address as the parameter and returning the height of the tree

C) Write complete program to construct an expression tree using the given postfix expression. (3+2+5)

4A) Write a complete code to delete repeated occurrence of a given number from a circular doubly linked list with header node. Functions to be implemented are createlinkedlist taking header node address as the parameter and deleterepeatedoccurence taking header node address and item to be deleted as the parameter.

4B) For the diagram given below find the minimum cost spanning tree using Kruskal's and Prims algorithm. Show the required tables and individual diagram for each edge added, indicating the reasons for adding each edge at every step.



(5+5)

5A) Write a complete code to merge two sorted singly linked list such that the resulting linked list is sorted.

5B) Write a complete program to reverse a string, as entered by the user, and check if it is palindrome using stack. (5+5)

6A) Write a recursive program to find the sum of all the elements in a given array

6B) Compare linear and binary search algorithms

6C) What is space and time complexity. Calculate the time complexity for the following set of instructions using step count table.

```
void funct(int a,int b)
{       int i,j;
        for (i=0;i<m;i++)
        {       for (j=0;j<n;j++)
                printf("%d", i*j);
        }
}
```

6D) A point in a plane is represented using structure POINT containing two fields x and y coordinates of type integer. A line can be represented by a nested structure LINE, having two structures of the type POINT marking the beginning and end points of the line. Write entire code along with a function which accepts a structure of type LINE and returns 1,2,3 based on whether the line is vertical (1), horizontal(2) and oblique(3) (2+2+3+3)

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