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CS-04

PGDCA / MCA (I Year)

Term-End Examination

December, 2010

01437

CS-04 : DATA STRUCTURES THROUGH "C" AND "PASCAL"

Time : 2 hours *Maximum Marks : 60*

*Note : Question number 1 is **compulsory.** Answer any three questions from the rest. All algorithms should be written nearer to "C" or "Pascal" language.*

1. (a) Write a program to create a mirror image of an existing binary tree. 8

   (b) Generate a binary tree by traversing inorder and preorder sequences given below : 4

   Inorder : B, E, D, A, G, F, H, C

   Preorder : A, B, D, E, C, F, G, H

   (c) Explain the operations that are performed on queues. Write a program to insert an element in a queue. 5

   (d) Construct a heap for the list given below. Clearly, indicate the changes in each step 10

   5, 3, 7, 9, 18, 2, 4, 1, 99, 71

   (e) Write the advantages and disadvantages of Dynamic Memory Allocation. 3

2. Assume a B-Tree of order 5. Insert the following data into this. 10

a g f b k d h m j e s i r x c l n t u p

Show, how the tree would appear on deletion of each of the following items in sequence.

h, r, p, d

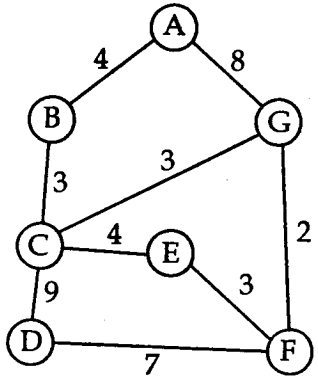
3. (a) Write the quick sort program. Also, use the following number as input to the program. Show clearly result of each pass : 7

8, 14, 3, 11, 16, 8, 19, 33, 12, 1, 99

(b) What is direct file organisation ? Give an example. 3

4. (a) Explain the purpose of MACRO with the help of a suitable example. 5

(b) Consider the following graph : 5



Construct a minimum cost spanning tree for the above graph. Indicate the steps involved in it.

5. Explain the following with an examples : **2½x4=10**

(a) M-Way Merging

(b) Height - Balanced Tree

(c) Hash Function

(d) Union in 'C'
