MCS-021

MCA (Revised) / BCA (Revised)
Term-End Examination
1 2 0 1 3   June, 2015

MCS-021 : DATA AND FILE STRUCTURES

Time : 3 hours   *Maximum Marks : 100*
(Weightage 75%)

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

1. (a)   Describe the asymptotic notations in detail.   *10*

    (b)   Write an algorithm to implement the insertion and deletion operations into a singly linked list.   *10*

    (c)   What is a circular queue ? Write an algorithm for insertion and deletion in a circular queue.   *10*

    (d)   Explain the types of rotations performed on AVL trees with an example.   *10*

2. (a) Write an algorithm to perform each of the following operations : *10*

   (i) Insertion of an element into a linear array.

   (ii) Delete every third element from a linear array.

   (b) Write an algorithm to implement dequeue using array. *10*

3. (a) Define binary tree. What are the traversals in binary tree ? Explain each traversal with an example. *10*

   (b) Create a Binary Search Tree for the following alphabets. Start from an empty BST.

   R, F, G, B, Z, U, P, K, L.

   Show the trees at each stage. *10*

4. (a) Discuss the Prim's algorithm to find the minimum cost spanning tree. *10*

   (b) Explain the process of converting a tree to a binary tree. *10*

5. (a) Illustrate inserting an element into a heap
with the following numbers :   *10*

2, 3, 81, 62, 1, 20, 35, 15, 9, 48.

(b) Write a short note on various file
organizations.   *· 10*

———————