No. of Printed Pages : 2

MCS-021

05712

MCA (Revised)

Term-End Examination

December, 2013

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**.*

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1. (a) Write an algorithms for the insertion and deletion operations on the circular queue. **10**

(b) Write a procedure to create, insert and display the content of a doubly linked list **10**

(c) Explain "Depth First Search" Algorithm with an example. **10**

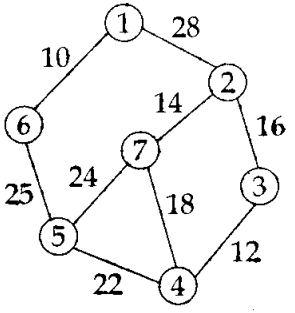
(d) What is the need for external sorting ? Explain any one method to perform external sorting. **10**

2. (a) Is it possible to implement multiple stocks using a Single Dimensional Array ? Justify your answer. **10**

(b) Write an algorithm for sorting whose average and best time complexities are same. **10**

3. (a) Create a binary search tree for following numbers start from empty BST
45, 26, 10, 60, 70, 30, 40. **10**

(b) Write Prim's algorithm for constructing Minimum Cost Spanning Tree and trace the algorithm for the following graph. 10



4. (a) Define the following term with an example : AVL trees. 10

(b) Explain the process of converting any Tree into a Binary Tree. 10

5. (a) Write an algorithm for the addition of two matrices using Single Dimensional Arrays. 10

(b) Propose a representation for a polynomial. Explain the advantages of such representation. 10