

Code: 9F00105

MCA I Semester Supplementary Examinations May 2016

**DATA STRUCTURES**

(For students admitted in 2010, 2011, 2012, 2013, 2014 &amp; 2015 only)

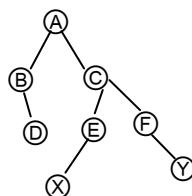
Time: 3 hours

Max. Marks: 60

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Write C program to concatenate two strings without using built-in function.  
(b) Differentiate between structures and union. Write C program to add two complex numbers using structures.
- 2 (a) Bring out the difference between static and dynamic memory allocation.  
(b) What is the advantage of circular singly linked list over singly linked list? Write C function to find the frequency of a given key in circular singly linked list.  
(c) Write C function to delete a key in doubly linked list.
- 3 (a) Write C functions for push and pop operations of stack using singly linked list.  
(b) Define recursion. Write recursive C program for factorial of a number.
- 4 (a) Differentiate between queues and stacks.  
(b) List applications of queues. Write C program to implement queue using arrays.
- 5 (a) Trace radix sort for the following data:  
125, 357, 408, 377, 120, 924, 836, 353  
(b) Write C program for sorting N numbers using quick sort.
- 6 (a) What is linear probing? For the following keys: 28, 47, 20, 36, 43, 23, 25, 54 and table size of 11 show the keys storage using linear probing.  
(b) Write C program for binary search.
- 7 (a) Write C program for constructing binary search tree.  
(b) Write C recursive function for post-order tree traversal technique.  
(c) Sketch the memory representation of binary tree given below using arrays and linked list.



- 8 (a) Explain threaded binary trees with an appropriate example.  
(b) Describe height balanced trees. Construct AVL tree by inserting keys 4, 5, 7, 2, 1, 3, 6.

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