Question Paper

Exam Date & Time: 05-Jan-2018 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SCHOOL OF INFORMATION SCIENCES FIRST SEMESTER MASTER OF ENGINEERING - ME (VLSI Design) DEGREE EXAMINATION (MAKE - UP) - JANUARY 2018 DATE : FRIDAY, JANUARY 05, 2018 TIME : 10:00AM - 1:00PM Data Structures [EDA 609]

Marks: 100

Duration: 180 mins.

Answer all the questions.

¹⁾ Write the data structure required to implement single ⁽¹⁰⁾ linked list. Write functions to add an element at any given position. In best case program should work in O(1) and worst case O(N).

(2+4+4)

²⁾ Write the data structures required to implement array ⁽¹⁰⁾ based stack. Write functions to check whether stack is full, stack is empty and delete element from stack.

(3+2+2+3)

³⁾ Give the data structure required for array based queue. ⁽¹⁰⁾ Write functions to create a queue, add and delete element from circular queue.

(2+2+3+3)

⁴⁾ What are the properties of Binary Search tree? With ⁽¹⁰⁾ requred data structure write function to add element into Binary Search Tree. Write a function for level order traversal of a binary search tree.

(2+5+3)

⁵⁾ Implement Merge sort. Give an example. Discuss its time ⁽¹⁰⁾ complexity.

(6+2+2)

⁶⁾ provide different techniques to find minimum spanning ⁽¹⁰⁾ tree. Describe Prim's algorithm with example.

7)	(4+2+2) What is hashing? With required data structure, write function to delete an element from Hash table using separate chain hashing (open hashing).	(10)
8)	(2+3+5) Considering two linked list A and B. Write a function to create linked list C=A Union B.	(10)
9)	(3+7) Write an algorithm for Single Source All Destination. Illustrate with an example	(10)
10)	(5+5) Write functions to A. Extract element from maximum heap B. Insert element into maximum heap	(10)
	(5+5)	

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