

Question Paper



MANIPAL UNIVERSITY

SCHOOL OF INFORMATION SCIENCES

FIRST SEMESTER MASTER OF ENGINEERING - ME (Big Data and Data Analytics)

DEGREE EXAMINATION - NOVEMBER 2017

DATE : Wednesday, November 15, 2017

TIME : 10:00AM - 1:00PM

Algorithms and Data Structures for Big Data [BDA 601]

Marks: 100

Duration: 180 mins.

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Answer all the questions.

- 1) Define Data structure, Algorithms and Program. Explain the conditions an algorithm should satisfy. (10)
- 2) Design Limited Stack data structure using python. It should be of finite size. It should have methods to push, pop and peek into the stack. Write test cases to check the behavior of stack. (10)
- 3) Define Queue data structure. List applications of queue. Design queue data structure using python. (10)
- 4) Design Single linked list using python. Provide method to add element at head, lookup and count number of elements in list. Write test cases to check the behaviors. (10)
- 5) Implement merge sort and discuss the time complexity. (10)
- 6) What is a heap? Given a list 25 8 65 45 15 38 72 81 5 28 build maximum heap. Draw all the stages of building heap. Show the steps of sorting in ascending order. (10)
- 7) What are the properties of binary search tree? Design a python class to represent BST and have methods to add element to BST and search whether 'key' is present in BST. (10)
- 8) What is collision in Hashing? Describe various techniques to overcome collision. (10)
- 9) Design a python class for Graph, which should have methods to add Vertex, edge, find neighbors of a given vertex, number of nodes in a graph. (10)
- 10) What is a trie? Write short note on Standard trie. (10)

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