Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

SCHOOL OF INFORMATION SCIENCES (SOIS)
FIRST SEMESTER MASTER OF ENGINEERING- ME (Big Data and Data Analytics)
DEGREE EXAMINATION-APRIL 2018
Tuesday, 17 April 2018
Time: 10:00am to 1:00pm
Algorithms and Data Structures for Big Data [BDA 601]

Marks: 100   **Duration: 180 mins.**

Answer all the questions.

1)	Explain space and time complexity. Illustrate with example.	(10)
2)	Design UnlimitedStack data structure using python. It should be of infinite size. It should have methods to push, pop and peek the stack. Write test cases to check the behavior of stack.	(10)
3)	Define Queue data structure. List applications of queue. Design FlexiQueue 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 quick sort and discus the time complexity.	(10)
6)	Given a list 25 65 45 15 38 72 81 5 build maximum heap. Draw all the stages of building heap. Sort the given list in ascending order. Show all steps.	(10)
7)	For the given list 50, 90, 35, 24, 63, 42, 73, 84, 48, 55, 12 build BST and provide the in-order, pre-order and post-order traversals. Write methods for BST traversals.	(10)
8)	Write short notes on Bit representation as a integer, Polynomial Hash codes and Cyclic-shift hash code.	(10)
9)	Design Graph data structure in Python with required methods. Write method to find path between given pair of vertices.	(10)
10)	Design a stack using a single queue as an instance variable, and only constant additional local memory within	(10)

the method bodies.

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