Reg. No.										

MANIPAL UNIVERSITY
SCHOOL OF INFORMATION SCEINCES

SECOND SEMESTER M.Sc. (INFORMATION SCIENCE) DEGREE
EXAMINATION – APRIL /MAY 2016

SUBJECT: MIS 502 – DATA STRUCTURES & ALGORITHMS

Wednesday, April 27, 2016

Time: 10.00 – 13.00 Hrs. Max. Marks: 100

1. Write the data structures required to implement single linked list. Given two single linked lists, write a program to check whether two lists are same
(3+7 = 10 marks)

2. With required data structures, write functions to create stack, push and peek element from linked list based stack.
(3+2+3+2 = 10 marks)

3. Give the data structures required for array based queue. Write functions to add element, count number of elements in the queue and check to whether queue is full.
(3+3+2+2 = 10 marks)

4. Write an algorithm to insert an item into binary search tree. Give example for different cases.
(7+3 = 10 marks)

5. Implement Mergesort. Illustrate the working with an example. Discus its time complexity.
(10 marks)

6. Write the following algorithms
a) All pairs shortest path b) knapsack problem
(5+5 = 10 marks)

7. Write function for BFS and DFS traversal of a graph. Illustrate this with an example
(5+5 =10 marks)

8. Write Djiskstra's algorithm. Illustrate with an example
(6+4 = 10 marks)

9. What is hashing? With required data structure, write function to add and delete elements from Hash table using separate chain hashing (open hashing).
(2+2+3+3 = 10 marks)

10. Write a function to delete all duplicate elements from double linked list. What is the time complexity?
(10 marks)

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