

**R13**

Code No: 812AF

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****MCA II Semester Examinations, August - 2017****DATA STRUCTURES AND ALGORITHMS****Time: 3 Hours****Max. Marks: 60****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

**PART - A****5 × 4 Marks = 20**

- 1.a) Explain the operations of stack with an example. [4]
- b) Write an algorithm of weighted union. [4]
- c) Explain the Bubble sort with an example. [4]
- d) Write an algorithm of double rotation of an AVL tree. [4]
- e) Explain the compressed trie with an example. [4]

**PART - B****5 × 8 Marks = 40**

2. Write a program to count the number of non zero values in a circular linked list. [8]

**OR**

3. Give linked list representation of queues. [8]

4. Explain the graph traversals with an example. [8]

**OR**

5. Write deletion algorithm of heap and also find the time complexity of the same. [8]

- 6.a) Explain how to reduce the collisions in hash table.

- b) Explain insertion sort algorithm. [4+4]

**OR**

7. Sort the following list of elements by using Quick sort  
60, 56, 66, 50, 72, 17, 95, 14 [8]

8. Draw the flow chart for splaying operations of Splay tree. [8]

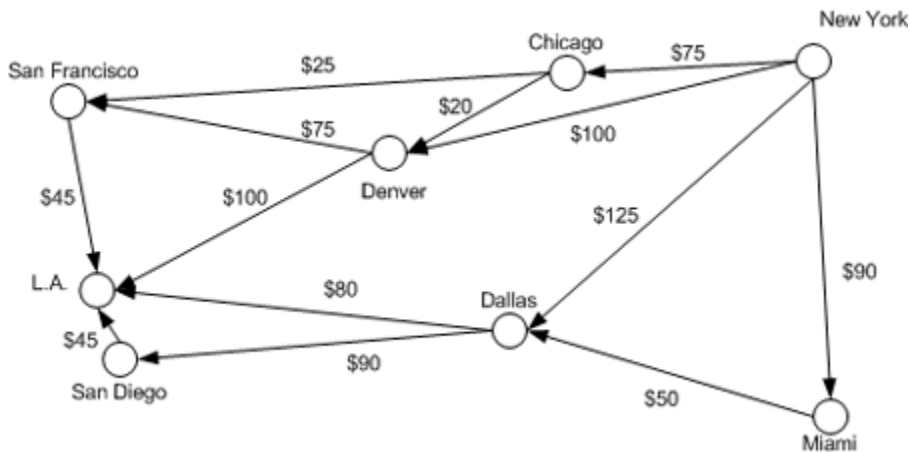
**OR**

9. Construct the Red – Black tree of the following instances  
45, 50, 48, 40, 38, 52, 55, 36 [8]

10. Write an algorithm of OBST. [8]

**OR**

11. Find the shortest path of the following graph by using single source shortest path. [8]



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