



Code No: 842AA

R17**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****MCA II Semester Examinations, June/July - 2018****DATA STRUCTURES AND ALGORITHMS****Time: 3hrs****Max.Marks:75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**5 × 5 Marks = 25**

- 1.a) Specify the Pseudo code convention for conditional statement. [5]
- b) Write Simple algorithms for union and find operations. [5]
- c) What is Graph Coloring? Explain with example. [5]
- d) Discuss how we can represent the skip list. [5]
- e) Explain any one Graph Traversal Methods. [5]

PART - B**5 × 10 Marks = 50**

2. Consider the array of ten elements 310, 285, 179, 652, 351, 423, 861, 254, 450, 520. Sort the given array of elements using Merge Sort. List out the elements at every phase and iteration. [10]
- OR**
3. Show that the following equalities are correct
a) $n! = O(n^n)$ b) $n^3 + 10^6 n^2 = \Theta(n^3)$ [5+5]
4. Compute a minimum cost spanning tree for the graph by using Prim's algorithm. [10]

**OR**

5. Construct Max Heap tree with the following set {40, 80, 35, 90, 45, 50, 70}. [10]
6. Explain in detail about Optimal Binary Search trees with an example. [10]
- OR**
7. Generate solution to the 8-queens problem with an example. [10]

8. Define Queue? Explain the procedure to perform last node deletion in circular linked list. [10]
OR
9. Write a program to implement Radix sort for the following elements 272, 45, 75, 81, 501, 2, 24, 66. [10]
10. Draw the BST that results when you insert items with keys **E A S Y Q U E S T I O N** in that order into an initially empty tree. [10]
OR
11. State and Explain in detail about Boyer Moore algorithm. [10]

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