



**MCA DEGREE II SEMESTER EXAMINATION MAY 2014**

**CAS 2203 COMPUTER ALGORITHMS**

*(Supplementary)*

Time: 3 Hours

Maximum Marks : 50

**PART A**  
(Answer *ALL* questions)

(15 x 2 = 30)

- I. (a) Describe growth of functions in algorithm analysis.  
(b) Brief on heap data structure.  
(c) Write a short note on binary search tree.
- II. (a) Brief on the efficiency of greedy algorithm with an example.  
(b) Write a note on divide and conquer algorithm.  
(c) Brief on back tracking problem with an example.
- III. (a) Discuss DFS method.  
(b) Explain the properties of strongly connected components.  
(c) Explain the general method of Branch and Bound.
- IV. (a) Write a note on Euclid's GCD algorithm.  
(b) Brief on integer factorization algorithms.  
(c) Discuss Dijkstra's algorithm.
- V. (a) Explain the classes of P and NP.  
(b) Explain merge sort. Write the algorithm.  
(c) Explain Heap sort with an example.

**PART B**

(5 x 4 = 20)

- VI. Define time complexity. Describe different notations used to represent the complexities.  
**OR**
- VII. Brief on AVL trees, insertion and deletion techniques in AVL trees.
- VIII. Discuss the algorithm for tower of Hanoi problem and its complexity.  
**OR**
- IX. Brief on Huffman encoding and its practical considerations.
- X. Write an essay on different tree traversal methods.  
**OR**
- XI. Brief on graph coloring algorithm.
- XII. Discuss the divide and conquer algorithm for matrix multiplication. How Strassen's method improved the complexity of the method.  
**OR**
- XIII. Demonstrate RSA algorithm.
- XIV. Discuss the time complexity of heap sort, merge sort, bubble sort and quick sort methods.  
**OR**
- XV. Discuss NP completeness and polynomial transformations.