END TERM EXAMINATION

THIRD SEMESTER **[MCA]** DECEMBER **2007**

Paper Code: MCA205 **Subject: Design & Analysis of Algorithm**

Time: 3Hours **Maximum Marks: 60**

Note: Attempt all questions. Internal choice I indicated.

Q.1 (i) Discuss time complexity of quick sort.
(ii) Define dynamic programming.
(iii) I merge sort a stable sorting algorithm? Justify your answer.
(iv) Define optional binary search tree.
(v) What o you mean by Huffman codes?
(vi) What is string matching?
(vii) When a problem is said to be polynomially reducible? Discuss briefly.
(viii) What do you mean by recurrences?
(ix) Define spanning tree.
(x) What is divide-and –conquer problem?

Q.2 (a) Develop and describe an algorithm for quick sort.
(b) What is merge sort? How is it useful and? Explain briefly.

OR

Explain the following briefly:
(i) Data structures for disjoint sets
(ii) Strassen's algorithm for Matrix Multiplications

Q.3 Differentiate between simple programming and dynamic programming in detail with their Relative merits, demerits, use and applications through suitable examples.

OR

Describe the following briefly:
(i) Greedy algorithms
(ii) Matrix Chain Multiplication

UNIT-II

Q.4 Describe Kruskal's algorithm to find a minimum spanning tree of a graph and also prove its Correctness.

OR

Explain the following briefly:
(i) Prim's algorithm for finding minimum cost spanning trees
(ii) Floyed-Warshall algorithm for all pair shortest paths

UNIT-IV

Q.5 What is finite automata? How string matching can be implemented through it? Explain in detail

with examples.

OR

Write short notes on the following:

(i) Knuth-Morris Pratt algorithm

(ii) NP-Complete problem