C 44403

Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2013

CS/PTCS 09 702 – DESIGN AND ANALYSIS OF ALGORITHMS

(2009 Scheme – Supplementary)

Time : Three Hours Maximum : 70 Marks

Part A

I. (a) What is big oh notation?

(b) What is backtracking?

(c) Define NP-complete problem.

(d) What is meant by integer factorization?

(e) Define Minimum spanning tree.

(5 × 2 = 10 marks)

Part B

II. (a) What is Quick sort? Give the complete analysis of it.

(b) Explain how divide and conquer is applied to Strassen's matrix multiplication algorithm.

(c) Prove that Hamiltonian cycle problem is NP-complete.

(d) Discuss about the Monte-Carlo algorithm of generating pseudo random number.

(e) What is Knapsack problem? Explain the greedy approach of solving Knapsack problem.

(f) Discuss about randomized solution for 8-queen problem.

(4 × 5 = 20 marks)

Part C

III. (a) With an example, explain Heap sort algorithm and the complete analysis of it.

Or

(b) Discuss about insertion, deletion and searching operation of a Red Black tree.

IV. (a) Explain Prim's algorithm for finding MST with an example.

Or

(b) Explain how divide and conquer is applied to $o(n)$ median finding algorithm.

V. (a) What is vertex covering problem? Prove that vertex covering problem is NP-Complete.

Or

(b) Prove that bin-packing problem is NP-hard.

VI. (a) Explain in detail about the Miller Robin test.

Or

(b) Explain in detail about the Les-vegas algorithm.

(4 × 10 = 40 marks)