C 37288

Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2004

CS 2K 601—DESIGN AND ANALYSIS OF ALGORITHMS

Time : Three Hours

Maximum : 100 Marks

Answer **all** *questions.*

1. (a) Why do we need worst case analysis ?

   (b) What do you mean by Linearity of expectations ?

   (c) What is the notion behind Divide and Conquer principle ?

   (d) Explain the greedy method with an abstraction.

   (e) What is Branch and Bound notion ?

   (f) Describe 15-puzzle problem.

   (g) State and explain monte Carlo algorithm.

   (h) How do you verify validity of matrix multiplication ?

(8 × 5 = 40 marks)

2. (a) Analyse Worst and Average case computation of HEAP sort.

Or

   (b) How do you detect collision and overflows in Hash table ? Give a method each.

(15 marks)

3. (a) Write a divide and concur multiplication algorithm. Solve its recurrence relation.

Or

   (b) Write Kruskal's algorithm for finding minimum spanning tree. Analyse it. Illustrate with an example.

(15 marks)

4. (a) Design an approximate algorithm for the Travelling salesman problem. Analyse it.

(15 marks)

Or

   (b) (i) Explain Conjunctive Normal Form (CNF) and Clique Decision Problem (CDF). (6 marks)

   (ii) Prove that CNF satisfiability reduces to CDP. (9 marks)

5. (a) Suggest a solution space when 8-queens problem is generalized to N-Queens problem.

Or

   (b) State and explain Miller Robin test. Give examples to illustrate the principle.

(15 marks)

[4 × 15 = 60 marks]