D 50495

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

CS 09 702—DESIGN AND ANALYSIS OF ALGORITHMS

Time : Three Hours   Maximum : 70 Marks

Part A

I. (a) What is sorting ?

   (b) Define branch and bound.

   (c) State Cook's theorem.

   (d) Define 8-Queen's problem.

   (e) What is meant by a clique ?

                                                              (5 × 2 = 10 marks)

Part B
Answer any four questions.

II. (a) Discuss in detail about the Morris Pratt algorithm.

    (b) Discuss the properties of optimal binary search trees.

    (c) What is Heap sort ? Provide the complete analysis of it.

    (d) Show that travelling salesman problem is NP-Complete.

    (e) Discuss about Pollard's rho heuristic.

    (f) With an example explain travelling salesman problem.

                                                              (4 × 5 = 20 marks)

Part C

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

                                     Or

     (b) Explain amortised weight balanced trees with an example.

IV. (a) Explain how dynamic programming is applied in Floyd-Warshall algorithm.

                                     Or

    (b) With an example, discuss about the Kruskal's algorithm for finding MST of a graph.

V. (a) What is Hamiltonian cycle ? Prove that Hamiltonian cycle finding problem is NP-Complete.

                                     Or

   (b) Prove that graph-colouring problem is NP-hard.

VI. (a) Discuss any two random number generation methods.

                                     Or

    (b) Write about the randomized solution for eight Queen's problem.

                                                              (4 × 10 = 40 marks)