Anna University

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2010

Fourth Semester

Computer Science and Engineering

CS2251 — DESIGN AND ANALYSIS OF ALGORITHMS

(Regulation 2008)

Time: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A — (10 × 2 = 20 Marks)

1. Differentiate Time Complexity from Space complexity.

2. What is a Recurrence Equation?

3. What is called Substitution Method?

4. What is an Optimal Solution?

5. Define Multistage Graphs.

6. Define Optimal Binary Search Tree.

7. Differentiate Explicit and Implicit Constraints.

8. What is the difference between a Live Node and a Dead Node?

9. What is a Biconnected Graph?

10. What is a FIFO branch-and-bound algorithm?

PART B — (5 × 16 = 80 Marks)

11. (a) Explain how Time Complexity is calculated. Give an example.

Or

(b) Elaborate on Asymptotic Notations with examples.

12. (a) With a suitable algorithm, explain the problem of finding the maximum and minimum items in a set of n elements.

Or

(b) Explain Merge Sort Problem using divide and conquer technique. Give an example.

13. (a) Write down and explain the algorithm to solve all pairs shortest paths problem.

Or

(b) Explain how dynamic programming is applied to solve travelling salesperson problem.

14. (a) Describe the backtracking solution to solve 8-Queens problem.

Or

(b) With an example, explain Graph Coloring Algorithm.

15. (a) Explain in detail the Graph Traversals.

Or

(b) With an example, explain how the branch-and-bound technique is used to solve 0/1 knapsack problem.