B.Tech Degree VI Semester Examination April 2011

CS/IT 604 ANALYSIS AND DESIGN OF ALGORITHMS

(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART - A

(Answer *ALL* questions)

(8 x 5 = 40)

I. (a) Explain with an example divide and conquer technique.

(b) Solve the recurrence equation $T(n) = 2T(\sqrt{n}) + 1$

(c) Explain any one searching algorithm with an example.

(d) What is Amortized Time Analysis?

(e) Explain strongly connected component algorithm.

(f) Explain transitive closure of a binary relation with an example.

(g) Explain the significance of approximation algorithm.

(h) Explain graph coloring problem with an example.

PART – B

(4 x 15 = 60)

II. (a) Explain the different asymptotic notations used for specifying the growth rate of functions. (10)

(b) Explain dynamic programming method of solving a problem. (5)

OR

III. Explain the various criteria used for analyzing algorithms with suitable examples. (15)

IV. Explain quick sort algorithm with an example. Analyze the worst case, best case and average case behaviour of quick sort. (15)

OR

V. (a) What are the properties of Red – Black Trees? Explain the insertion procedure to a Red – Black Tree. (10)

(b) Explain the union operation in Binomial Heap. (5)

VI. (a) Explain any one algorithm for finding all pair shortest path in graphs. (10)

(b) Explain BFS with an example. (5)

OR

VII. What is a binary search tree? Explain an algorithm for constructing an optimal binary search tree. Analyze its complexity. (15)

VIII. (a) Distinguish between NP hard and NP complete problem. (5)

(b) What is Bin Packing problem? Explain the first fit decreasing strategy for solving bin packing problem. (10)

OR

IX. Define Travelling saleman problem. Explain the three possible strategies for TSP. (15)

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