Code No.: 3098

FACULTY OF INFORMATICS

B.E. III/IV Year (IT) (Main) II Semester Examination, May/June 2011

DESIGN AND ANALYSIS OF ALGORITHMS

Time : 3 Hours] [Max. Marks : 75

Answer **all** *questions from Part A.*
Answer any **five** *questions from Part B.*

Part A – (Marks: 25)

1. What is Binary Search? 2
2. Write the control Abstraction of Greedy strategy. 3
3. Define minimum cost spanning tree. 2
4. State Bellman's principle of optimality of dynamic programming. 3
5. Explain about Depth First Search. 3
6. What is Backtracking ? 2
7. State graph coloring problem. 3
8. What is Hamiltonian cycles ? 2
9. Define NP-Hard. 2
10. Write the functions of Non-deterministic Algorithms. 3

Part B – (Marks: 5×10 = 50)

11. Explain set representation using trees and develop algorithms for UNION and FIND using
    (a) Weighing rule. 5
    (b) Collapsing rule 5
12. (a) What is divide and conquer ? Give the control abstraction. 5
    (b) Write the algorithm for Mergesort using divide and conquer. 5
13. (a) Discuss in detail about all pairs shortest path problem. 5
    (b) Write an algorithm to find the shortest path in a multi stage graph using dynamic programming. 5

14. (a) Explain Branch and Bound Technique ? Give an Example ? 5

(b) Explain Travelling sales person problem with an example. 5

15. State and prove Cook's theorem. 10

16. (a) Explain LC Branch and Bound. 5

(b) Discuss in detail about the Node Covering Problem. 5

17. Write short notes on :

(a) Biconnected components 4

(b) Reliability Design 3

(c) Randomized Algorithms. 3