BANGABANDHU SHEIKH MUJIBUR RAHMAN SCIENCE AND TECHNOLOGY UNIVERSITY, GOPALGONJ-8100

Department of Computer Science and Engineering

2nd Year 2nd Semester Examination 2013

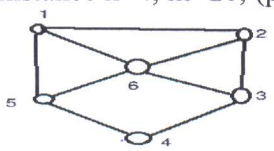
Full Mark: 70 | CSE250: Analysis and Design of Algorithms | Time: 4 hours

SECTION-A

(answer any three from 1 to 4)

1. a) What do you mean by analysis of algorithm? 3.67
   b) Write about best, average and worst case analysis with proper example. 4
   c) How counting sort works? Give example. 4

2. a) What do you mean by "Dynamic Programming" 2.67
   b) Explain Matrix Chain Multiplication. 6
   c) Find minimum of operations required for the following matrix chain multiplication using dynamic programming A(30,40)*B(40,5)*C(5,15)*D(15,6) 3

3. a) Explain Greedy method. By using Greedy method find an optimal solution to the knapsack instance n=4, m=20, (p1,p2,p3,p4)=(25,23,16,10) and (w1,w2,w3,w4)=(17,14,10,9). 7.67
   b) 

   For this graph draw BFS Traversing Tree. 4

4. a) What do you mean by NP-Completeness? 3.67
   b) Discuss about Branch and Bound. 4
   c) What are the rules followed in 15-Puzzle Problem. 4

SECTION-B

(Answer any three from 5 to 8)

5. a) What is minimum spanning tree? 3.67
   b) Describe prim's algorithm with example? 4
   c) Write and discuss Floyd-Warshall algorithm with an example graph. 4

6. a) What happened when a graph contains negative edge in shortest path algorithm? 3.67
   b) What is shortest path problem? Define single source shortest path algorithm? 4
   c) What do you mean by time and space complexity of an algorithm? 4

7. a) What are the properties of backtrackings? 3.67
   b) Give an example algorithm to determine convex hull of a set of points. 4
   c) Describe graph coloring problem. 4

8. a) What is Hamilton cycle? 3.67
   b) What is meant by asymptotic notation? Explain it with proper example. 4
   c) Show that complexity of quick sort algorithm is $n*\log_2(n)$ 4