

Code No: A5801

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Examinations, October/November 2011

DESIGN AND ANALYSIS OF ALGORITHMS

(COMPUTER SCIENCE AND ENGINEERING)

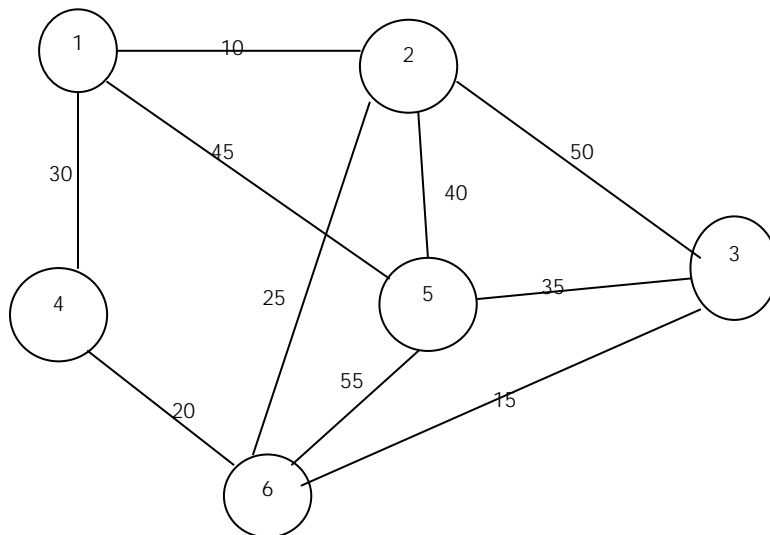
Time: 3hours

Max. Marks: 60

Answer any five questions  
All questions carry equal marks

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- 1.a) What is a virtual function? What are the implications of making a function a pure virtual function?
- b) What are the different forms of inheritance? Give an example for each. [6+6]
- 2.a) Discuss union and find algorithms.
- b) Define Heap. Briefly explain about Heap sort with neat example. [6+6]
- 3.a) Write and explain the control abstraction for Divide and Conquer.
- b) Briefly explain Merge Sort Algorithm with suitable example and derive its Time Complexity. [6+6]
4. Write and explain the Kruskal's algorithm, applying the algorithm construct a minimal spanning tree for graph given bellow. [12]



5. Discuss the dynamic programming solutions for the problems of
  - a) Reliability design and
  - b) Traveling salesperson problem. [6+6]
- 6.a) Briefly explain about DFS and BFS graph traversal techniques.
- b) Briefly explain about Bi-Connected components. [6+6]
- 7.a) Briefly explain 8-queen problem using backtracking. Explain its application.
- b) Briefly explain graph coloring using backtracking. [6+6]
- 8.a) Compare and contrast between NP-HARD and NP-COMPLETE.
- b) Briefly explain Cooks-theorem. [6+6]