

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
15.053 – **Optimization Methods in Management Science** (SPRING 2013)
Information about Quiz 6.

Quiz 6 will be a 30-minute quiz. The problems will be drawn from the problem types described below.

The italicized words are vocabulary that may be used in the questions on the quiz.

Topics from the lecture 15: Networks 1.

1. Definitions and terminology: *network, arc, node, degree of a node, adjacency list, adjacency matrix, path, cycle, tree, walk, closed walk, Eulerian cycle, connected, tree, shortest path problem.*
2. Dijkstra's algorithm for finding a shortest path from an origin node to all other nodes.
 - terminology: *distance labels, permanent nodes, update arcs, predecessor of a node,*

Topics from the lecture 16: The Minimum Cost Flow Problem.

1. Formulation of a min cost flow problem as a linear program.
2. The Integrality Theorem (also called a remarkable theorem.)
3. *The Transportation Problem*
4. *The Assignment problem.*
5. The maximum number of independent 1's is equal to the minimum number of lines containing all of the 1's.

Topics from the lecture 15: TSP and Heuristics.

1. *The Traveling Salesperson Problem (TSP)*
2. *The facility location problem*
3. Design a *construction heuristic* for TSP or the facility location problem
4. Design an *improvement heuristic* for TSP or the facility location problem

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