True-False Questions: Week 6

1. True-False (±32 points)

To discourage guessing, each correct answer is rewarded with one point, each incorrect answer is penalized with one point, and a question left unanswered is neither rewarded nor penalized. For example, if you answer seven questions out of ten correctly and answer three questions wrong, then your final score will be four. On the other hand, if you had answered only the six questions of which you were sure and left the remaining four questions blank, then your final score would have been six. This policy makes the expected reward for guessing equal to zero.

The questions in each paragraph are always related to the same topic and any assumptions remain valid in this paragraph unless otherwise stated. Questions in different paragraphs have no relationship with each other and assumptions do not remain valid from one paragraph to the next.

Maximum flow networks are primarily used in the design of public sector and government networks, (T/F)_____(1).

The 2-Opt procedure by Lin to improve an existing TSP tour takes a sequence of nodes out of the tour and inserts it into another place in the tour to form a tour of shorter length, (TF) _____(2).

In a Dial-A-Ride system vehicles have to serve individual shipment requests each with an origin and destination, (T/F)_____(3).

Consider the classical Traveling Salesman Problem (TSP). The problem is to construct the single shortest cycle that visits all points exactly once, (T/F)_____(4).

If all the points of a TSP fall on the boundary of the convex hull of these points then this boundary of the convex hull is the shortest TSP tour, (T/F)_____(5).

The largest problem instances of the Shortest Path Problem that can be solved in a reasonable amount of computer time contain about 2400 nodes, (T/F)_____(6).

The successive shortest path algorithm is currently the most efficient method for solving minimum cost network flow problems, (T/F)_____(7).

If the two and three exchange improvement procedures by Lin and Kernighan can no longer find any improvements in a traveling salesman tour then this tour is optimal, i.e., has the shortest length, (T/F)_____(8).

The subtour elimination constraints in the traveling salesman formulations make the problem so hard to solve because of the large coefficients in the right hand side of the constraints, (T/F)_____(9).

The network used to model emergency high-rise building evacuations belongs to the class of maximum flow networks, (T/F) _____(10).

The network used to model the assignment of workers to shifts in a 24-hour service operation belongs to the class of maximum flow networks, (T/F) _____(11).

The computational complexity of solving network formulations limits the size of the networks that can be solved to optimality to 10,000 arcs, (T/F) _____(12).

The standard network flow formulation can incorporate capacity restrictions on the nodes without any changes to the network structure, (T/F) _____(13).

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