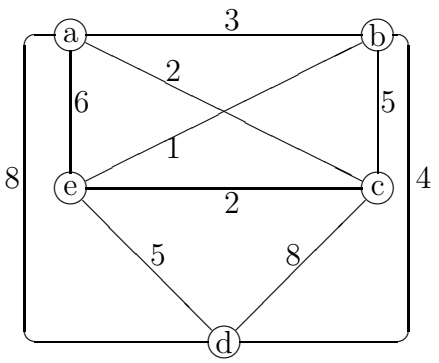
T-79.4201 **Spring 2006**
Search Problems and Algorithms
Tutorial 3, 10 February
Problems

1. Simulate the behaviour of the Lin–Kernighan 2-opt heuristic on the TSP instance below, starting with the initial candidate route *abcde*.



2. Determine an optimal TSP route for the graph of Problem 1 using the Branch and Bound method discussed at the lectures.

3. Consider the MAX CUT optimisation problem discussed in Problem 4 of last week's tutorial. Write down in pseudocode a Simulated Annealing method for optimising the objective function of this problem. Indicate in particular what is the neighbourhood relation you are using for the candidate solutions. Note also that MAX CUT is a maximisation problem, not minimisation as assumed in the general presentation of Simulated Annealing given at the lectures.

4. Design a Branch and Bound method for solving the MAX CUT optimisation problem. Indicate in particular what is your notion of a partial solution, and what upper bounding heuristic you are using to prune the search. Present a small example of how your method works.