Homework #5

$$\boxed{\textbf{Deadline: Monday, 8 October 2012, 13:00}}$$

Question 1 (10 marks)

A *weak Condorcet winner* is a candidate that will win or draw against any other candidate in a pairwise majority contest. Show that a weak Condorcet winner always exists when voters express their preferences using the *language of single goals* introduced in the lecture on voting in combinatorial domains.

Question 2 (10 marks)

For this question, we restrict attention to judgement aggregation problems with the agenda $\{p, \neg p, q, \neg q, p \wedge q, \neg(p \wedge q)\}$. We know that there exists no judgement aggregation procedure for this agenda that is consistent, complete, anonymous, neutral, and independent.

(a) Show that the $\frac{2}{3}$-supermajority rule (which accepts a proposition from the agenda if and only if *strictly* more than $\frac{2}{3}$ of the individuals accept it) satisfies all of these requirements, except for completeness. (*Hint:* The difficult part is to prove consistency.)

(b) Show that this agenda fails to be safe for all uniform quota rules with a quota of less than 2/3.

Question 3 (10 marks)

While strategic manipulation is a central topic in voting theory, it has received relatively little attention in judgment aggregation. The reason might be that manipulation in judgment aggregation is not a straightforward concept to define. In voting theory, an agent is said to be able to manipulate if she can obtain a preferred outcome by misrepresenting her input to the aggregation mechanism. While it is clear how to define misrepresentation also in judgment aggregation, there is no notion of preference to refer to to define an agent's incentives to engage in such an act of misrepresentation.

Suggest an interesting definition of strategic manipulation in judgment aggregation and discuss its advantages and shortcomings. You may either discuss a proposal from the literature or your own ideas. Write at most two pages of text.