Coursework #2

Deadline: Tuesday, 18 March 2008, 11:00am

Question 1 (10 marks)

In the context of representing utility functions by means of weighted propositional formulas, show that the language $\mathcal{L}(\mathit{clauses}, \mathit{all})$, which is based on clauses, is strictly more succinct than $\mathcal{L}(\mathit{pcubes}, \mathit{all})$, which is based on positive cubes.

Question 2 (10 marks)

A *weak Condorcet winner* is a candidate that wins or draws against any other candidate in a pairwise competition. 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 3 (10 marks)

Prove that sequential voting with CP-nets satisfies the Condorcet principle whenever all of the local voting rules do.