Coursework #3

Deadline: Monday, 13 March 2006, 11:15am

Question 1 (10 marks)

Recall the Monotonic Concession Protocol (MCP) for bilateral negotiation. Now consider the following strategy to be used with the MCP:

> *In the first round, propose the best possible agreement for yourself. In every subsequent round, if the other agent has just conceded during n consecutive rounds, then make a (minimal) concession with probability $1/(n+1)$.*

Answer the following questions:

(a) Is this strategy stable (*i.e.* is the profile where both agents use this strategy a mixed Nash equilibrium)? Briefly justify your answer.

(b) Is this strategy efficient (*i.e.* does it guarantee Pareto optimal outcomes if used by both agents)? Briefly justify your answer.

Question 2 (10 marks)

Show that for the game defined by the Monotonic Concession Protocol, the mixed strategy profile where both agents play according to the Extended Zeuthen Strategy is a mixed Nash equilibrium.

Question 3 (10 marks)

Vickrey auctions are one-shot second-price sealed-bid auctions. We have seen the advantages of using second-price rather than first-price auctions in class. Maybe we could get further improvements by introducing a third-price auction?

(a) Define the protocol for one-shot third-price sealed-bid auctions.

(b) What would be a good bidding strategy for this type of auction?

(c) Recall that the dominant bidding strategy for private value Vickrey auctions is to bid your true valuation. Is there a dominant strategy for third-price auctions?

(d) Recall that the four auction protocols discussed in class are Pareto efficient. Is this also the case for the third-price protocol?