Examination 20024 Microeconomic Analysis

Examiner: Prof. Dr. J. Weimann Winter 2007/2008

Instructions:

- Please answer all five questions.
- Use of non–programmable calculators is allowed.
- Please put your name on *all* sheets.
- Please hand in *all* exam materials.

Question 1

Consider the following game with imperfect information:

		Player B	
		b_1	b_2
A	a_1	2(1+k), 2(1+k)	1, 1
	a_2	1, 1	2, 3

a) For what values of k is the game a prisoner's dilemma?

b) Why is the game *no* prisoner's dilemma for $k = 0$?

c) Why is the game *no* prisoner's dilemma for $k = 4$?

Question 2

Consider the following game in simultaneous moves.

		player B		
		b_1	b_2	b_3
player A	a_1	100, 2	0, 0	-100, -100
	a_2	-100, -100	1, 0	100, 2

a) Which of player B's strategies, if any, is dominated?

b) Which of player B's strategies, if any, is dominant?

c) Find the pure strategy Nash equilibria.

Question 3 Consider the following strategic form.

		player B			
		m_1	m_2	m_3	m_4
player A	E	-10, 0	-10,0	40, 50	40, 50
	$\overline{E}$	0, 300	0, 300	0, 300	0, 300

a) Write down the complete strategy space by player B.

b) Write down all Nash Equilibria (if any).

c) Write down all subgame perfect Nash Equilibria (if any).

Question 4

Figure 1 gives the reaction curves of two players, each indicating the best response to the action of the respective opponent.

a) Copy the figure to your paper and indicate the locations of all Nash equilibria.

b) Copy the figure again. Given the assumption, both players follow standard myopic best response dynamics, analyze if these dynamics if starting in point A will lead to one of the equilibria you found. (Note: Three time steps should be sufficient.)

c) Copy the figure again. Given the assumption, both players follow standard myopic best response dynamics, analyze if these dynamics if starting in point B will lead to one of the equilibria you found. (Note: Three time steps should be sufficient.)

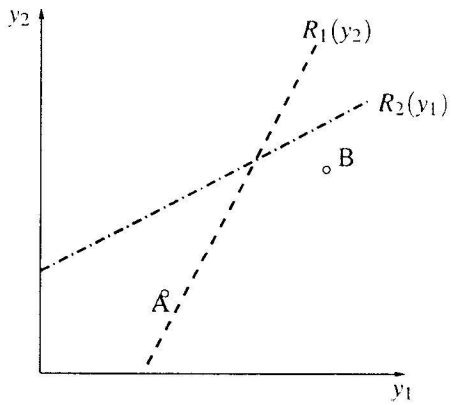

Figure 1: Stable or Not?

Question 5

Consider a linear version of the Tullock model of rent seeking. Strategies by player i are investment levels x_i. Payoff to i is given by

$$\pi_i = \frac{x_i}{\sum_{j=1}^{n} x_j} V - x_i,$$

where V is the value of the rent the n players are seeking.

a) Derive the individual reaction function for player i.

b) Find the (symmetric) Nash equilibrium.