Klausur/Exam – Microeconomic Analysis (20024) – SS 2012
• Prüfer/Examiner: Manfred Jäger-Ambrożewicz, 02 Exam on Microeconomic Analysis, 2012-07-16
• No aids are allowed but a pocket calculator according to the rules of the examination office and a bilingual dictionary.
• The exam has 8 questions on 2 pages. 7 questions have to be answered. You have to choose whether you answer question 7 or 8. If you answer both, only the answer to question 7 will be taken into account. Please clearly state which question (7 or 8) you are answering. Your time budget is 120 minutes.
• When answering the questions you must provide explanations, intermediate steps and explicit verifications!

Question 1 (12 min / 10 points): Consider the following game with two players called Row and Column. Row has three strategies: T,M,B and Column also has three strategies: L,C,R. The table 1 displays the payoffs.
a.) What strategies survive **iterated elimination of strictly dominated stategies**? **At each step of elimination you have to provide the justification for elimination!**
b.) What are the **pure-strategy Nash equilibria (NE)**? **It is necessary to provide a complete reasoning why a profile is or is not a NE!**

Table 1

|	L	C	R
T	1,2	2,1	1,0
M	2,1	0,1	0,0
B	0,1	0,1	0,2

Question 2 (12 min / 10 points): Consider the following game with two players called Row and Column. Row has three strategies: T,M,B and Column also has three strategies: L,R. The table 2 displays the payoffs. Use **iterated elimination of strictly dominated stategies** to determine the unique outcome of the game. **It is necessary to provide all intermediate steps.**

Table 2

	L	R
T	10,4	0,1
M	4,2	4,3
D	0,5	10,2

Question 3 (15 min / 12.5 points): Consider the game tree in figure 1. There is something "wrong" with respect to the information structure. Explain what is "wrong".

Figure 1
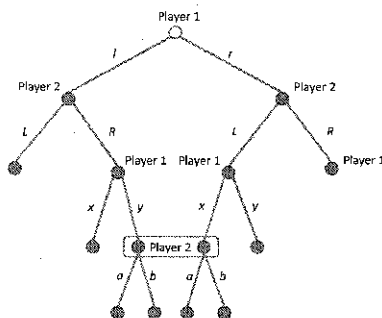
Question 4 (12 min / 10 points): Consider the two games with payoffs as displayed in figure 2. Explain a.) what these two games have in common and b.) why one may expect different outcomes.
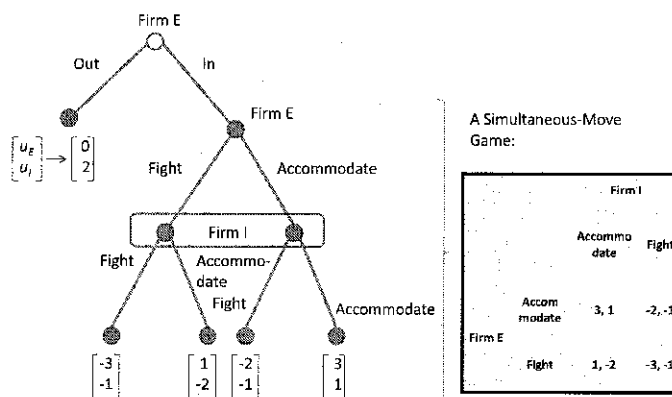
Figure 2

100,100	0,0		9,9	0,8
0,0	1,1		8,0	7,7

Question 5 (18 min / 15 points):
a.) Verify that the game displayed in figure 3 has **three** Nash equilibria.
b.) Verify that there is only one **subgame perfect** Nash-equilibrium.
c.) Why are the two Nash equilibria found in a.) less plausible than the Nash equilibrium of b.)

Figure 3

Question 6 (21 min / 17.5 points): According to Coase a monopolist who supplies a **durable good** faces a specific **strategic delimma. Explain this dilemma!** Refer to the two periods model with profits (don't derive these formulae but use them as a basis for your argument)

$$\pi_2 = (1 - x_1 - x_2)x_2,$$
$$\pi_1 = (1 - x_1 + \delta(1 - x_1 - x_2))x_1 + \delta(1 - x_1 - x_2)x_2$$
$$= x_1 - x_1^2 + \delta x_1 - \delta x_1^2 - \delta x_1 x_2 + \delta x_2 - \delta x_1 x_2 - \delta x_2^2,$$

where x_1 and x_2 refer to the supplies in period 1 resp. period 2.
Hint: Focus on First Order Conditions and ignore the Second Order Conditions. Remember, that in one case the Kuhn-Tucker-Condition implies a **boundary solution.** It is not necessary to verify this mathematically but you must provide an explanation of the importance of this aspect of the solution. In order to **explain the dilemma** it is not necessary to solve **all** relevant optimization problems but to explain the problem with **one** optimization problem.

Question 7 (30 min / 25 points): Consider figure 4.
a.) Explain – refering to the game of figure 4 – what a belief μ is!
b.) In a weak perfect Bayesian equilibrium beliefs are calculated in a certain way. Explain how?
c.) Verify that there is no system of beliefs such that (out, fight if in) is sequentially rational.
d.) Verify that (in1, accomodate if in) is a weak perfect Bayesian equilibrium.

Figure 4
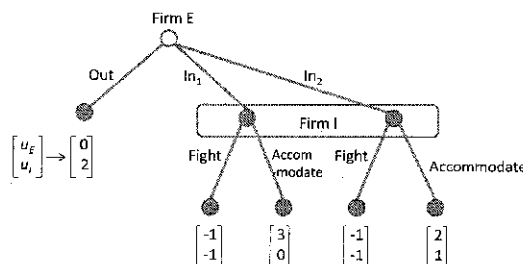
Question 8 (30 min / 25 points): Consider a **monopolist** with constant marginal cost of $c > 0$ who faces the following demand

$$X(p) = p^{-\epsilon}.$$

a.) Calculate Cournot monopoly price p as a function of c and ϵ.
b.) Verify that $p = (1 + \phi)c$ for some ϕ. Calculate ϕ in terms of ϵ.
c.) Suppose $\epsilon = 2$ and $c = 1$. Calculate the welfare loss relative to perfect competition (where $p = c$).