Stockholm University

Department of Economics

Course name:	**Economics of Industrial Orgainzation**
Course code:	**EC2108**
Examiner:	**Sten Nyberg**
Number of credits:	**7,5 credits**
Date of exam:	**Monday March 17 2014**
Examination time:	**3 hours [9:00-12:00]**

Write your identification number on each paper and cover sheet (the number stated in the upper right hand corner on your exam cover).

Use one cover sheet per question. Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked. **No aids are allowed.**

The exam consists of 9 questions. The questions in Part I are worth 5 points each, those in Part II 30 points and the credit question in Part III 10 points, amounting to 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

Your results will be made available on your "My Studies" account **(**www.mitt.su.se), on April 7th 2014 at the latest.

Good luck!

Part I: Multiple-choice questions. Select exactly one alternative for each question. Each correct answer gives 5 points and each incorrect answer -1 point.

1. Suppose the demand elasticity at the profit maximizing monopoly price is 3, and that the monopolist has a constant marginal cost equal to 2. What is the monopoly price?

   (a) 2/3.
   (b) 1.
   (c) 3/2.
   (d) 3.
   (e) 6.

2. Consider an infinitely repeated game where the payoffs of the stage game are given in the payoff matrix below.

		Player 2 H	Player 2 L
Player 1	H	4,4	0,6
	L	6,0	1,1

   Let ρ be the players' discount factor. How large must ρ at least be to make {H,H} an equilibrium in the repeated game?

   (a) 2/3.
   (b) 1/2.
   (c) 2/5.
   (d) 1/3.
   (e) 1/5.

3. The Dorfman Steiner model implies that

   (a) Advertising spending in itself can be a signal of a high quality product
   (b) A stronger taste for variety increases advertising spending
   (c) Firms may wish to supress advertising content
   (d) Increased market power leads to more advertising, not the other way around
   (e) That profits rise if advertising becomes more expensive

4. A local monopolist has discovered that its consumers have identical demand and considers using a block price to raise profits. Suppose the demand for a consumer is given by Q = 8 - P and that the monopolist's marginal cost is 2. What is the profit maximizing block price (for the associated optimal quantity)?

   (a) 3.
   (b) 4.
   (c) 18.
   (d) 30.
   (e) 36.

5. Suppose a market consists of 4 equal sized firms. Then two of these firms merge and keep their combined market share. How much has the Herfindahl Hirshman index for the market changed as a consequence of the merger? (Below HHI is expressed in the 0 to 1 range but if you prefer the 0 to 10.000 range just multiply by 10.000)

   (a) 0.0625.
   (b) 0.125.
   (c) 0.25.
   (d) 0.333…
   (e) 0.5.

6. Which of the following statements is *not* true about the oligopoly model of price competition with differentiated products we have examined in the course (where firms have linear demand of the type $Q_i = a - p_i + bp_j$).

   (a) Firms set prices so that MR = MC.
   (b) There is a 2^{nd} mover advantage if the game is sequential and the first firm can commit to its price.
   (c) The equilibrium price increases with the degree of product differentiation.
   (d) The equilibrium price increases in market concentration.
   (e) Prices are strategic substitutes.

Part II: Questions that require answers with calculations/motivation.

7. A monopolist offers two goods Sweeties and Salties to four consumers, A through D. Each consumer buys at most one unit of each good. The consumers' valuations of the two goods are given in the table below. The monopolist has no production costs.

		Consumers			
		A	B	C	D
Goods	Sweeties	9	1	7	5
	Salties	1	9	5	7

(a) (10 points) What are optimal (profit maximizing) uniform prices for the goods?
(b) (10 points) What is the optimal bundled price?
(c) (10 points) What is the optimal pricing under mixed bundling?

8. Consider a market where P(Q) = 20 – Q and where the incumbent firm has a constant marginal cost equal to 5 and a fixed cost equal to 20.

(a) (10 points) Suppose a new firm with the same costs as the incumbent enters the market and that the firms engage in Cournot competition. Calculate the firms' reaction functions and solve for the equilibrium quantities, price and profits.
(b) (15 points) Suppose the incumbent firm could make a sunk investment in a low cost technology, reducing its marginal cost to 2, before entry occurs. The investment cost is 30. Calculate the equilibrium given that the entrant comes in. Is entry profitable for the entrant in this case? Would the incumbent invest?
(c) (5 points) Suppose the investment deters entry. Calculate whether it would be profitable for the incumbent to make the investment even if there was no risk of entry in the first place.

Part III: Credit question (For students who do not have credit for the assignments).

9. (10 points) Consider a market with inverse demand P(Q) = 50 – Q. Suppose a monopolist has a constant marginal cost equal to 20 but has the opportunity to invest in a new technology which reduces the marginal cost to 10. (i) Calculate how much the monopolist would be willing to pay for such a technology. (ii) Now, suppose instead that an entrant has the opportunity to acquire this technology, in which case the incumbent's marginal cost remains 40. How much would the entrant be willing to pay? Assume that the products are homogenous and that firms compete in prices. (iii) In which scenario is the willingness to pay greatest? What effect does this example illustrate?