EC2083 Non-Finalist

UNIVERSITY OF WARWICK

Summer Examinations 2018/19

Industrial Economics 1: Market Structure

Time Allowed: 2 hours.

Answer **ALL THREE** questions from **Section A** (20 marks each), and **FIVE** out of **SIX** questions from **Section B** (40 marks in total). Answer Section A questions in one booklet and Section B questions in a separate booklet.

Approved pocket calculators are allowed.

Read carefully the instructions on the answer book provided and make sure that the particulars required are entered on each answer book. If you answer more questions than are required and do not indicate which answers should be ignored, we will mark the requisite number of answers in the order in which they appear in the answer book(s): answers beyond that number will not be considered.

Section A: Answer ALL THREE questions

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1. Suppose there are two production periods (periods 1 and 2). Consider one firm, who is a price taker and faces a price of 16. The firm's total cost function in each period is given by:

$$C(q_t) = (1/2) * (q_t)^2 - (1/2) * q_t * \{\text{cumulative past production}\},$$

where q_t is production in period t. In the first period, the cumulative past production will be equal to zero. In the second period, the cumulative past production will be equal to period 1 production.

(a) Solve for the production level in period 1 that maximises period 1 profits. **(5 marks)**

(b) Take your answer to (a) as the amount produced in period 1 and solve for the production level in period 2 that maximises period 2 profits. What are the total profits for the two periods? **(5 marks)**

(c) What happens if, in period 1, the firm chooses its production levels, for each of the two periods, 1 and 2, so as to maximise total profits? (Assume the future does not get discounted.) **(6 marks)**

(Question 1 continued overleaf)

(d) Explain how and why the solution in (c) is different from the ones in (a) and (b). **(4 marks)**

2. Two firms offer two goods of differentiated quality, and they compete in prices. Specifically, firm 1 offers good 1, which has high quality $q_1=20$, while Firm 2 offers good 2, which has low quality $q_2=10$. There is a continuum of consumers with taste for quality θ, uniformly distributed between 0 and 1, $0 \leq \theta \leq 1$. Each consumer chooses between good 1 and good 2. If a consumer with parameter θ chooses good 1, she has utility $q_1*\theta - p_1$, where p_1 is the price of good 1. If instead the consumer chooses good 2, she has utility equal to $q_2*\theta - p_2$.

(a) Suppose for the moment that firms have chosen prices $p_1=10$ and $p_2=2$. How many consumers will buy good 1? **(5 marks)**

(b) Characterise the demand for good 1 and good 2 for a given choice of p_1 and p_2. **(7 marks)**

(c) What are the equilibrium prices p_1 and p_2? What are the profits of the two firms? Explain your reasoning. **(8 marks)**

3. Assume that an upstream firm, denoted by U, produces an input at zero cost. A downstream firm (D) transforms the input into a final good on a one-for-one basis without incurring any additional cost. Let w denote the price of the input, and let P denote the price of the final good. Market demand for the final good is given by P=1-Q.

(a) Assume that first firm U sets the price for the input (w) and, in a second period, the downstream firm decides how much to produce (Q). Calculate the equilibrium values of P, Q, and w. Calculate profits for the upstream and downstream firms, as well as total profits. **(5 marks)**

(b) What is the optimal transfer price? What quantity would be produced if the optimal transfer price is applied? Please explain. **(4 marks)**

(c) Suppose now that there are N downstream firms (instead of one). After the upstream firm sets the price for the input w, downstream firms compete in quantities in the market for the final good. Market demand is given by $P = 1 - (q_1 + q_2 + ... + q_N)$. Calculate the equilibrium values of q_1 , ..., q_N, w and P. (Hint: your answers will be functions of N.) **(6 marks)**

(d) What happens as the number of firms increases? Comment on your results. **(5 marks)**

Section B: Answer FIVE questions.
Please use a separate booklet.

In each case, decide whether the statement is **True**, **False**, or **Uncertain**. Explain the reason for your answer (**one or two sentences**). Most or all of the credit will be given for the explanation.

4. Consider a Cournot oligopoly with two firms. The Herfindhal index would suggest the market is relatively less concentrated if firms have the same cost functions. **(8 marks)**

5. A firm competing in prices might have a strategic advantage if it underinvests in capacity. **(8 marks)**

6. A monopolist will never find it optimal to choose a quantity so that the elasticity of demand is $|\varepsilon^d| < 1$ **(8 marks)**

7. Cartels function better if they are composed by few firms. **(8 marks)**

8. A monopolist selling cars should never make a commitment regarding future pricing policies, as the demand for cars is very volatile. **(8 marks)**

9. Retail Price Maintenance is always an illegal practice. **(8 marks)**

(End)