

EE481 Mock up Final Examination, Semester 1/2016 (Section 046401)

Note: Please attempt all questions by yourself first.

The level of difficulty is as same as the forthcoming final exam.

Good luck.

Best wishes,

Aj.Ton

P.S. I will be in the office on Tuesday 13 Dec 2016. You can also ask questions by email: pwrasai@gmail.com. Line ID: ton.wrasai

1. Consider a Hotelling model with two firms: firm 1 is located at $y_1 = 0$, and firm 2 is located at $y_2 = 1$. Consumers are uniformly distributed along the interval $[0; 1]$. Each consumer wishes to buy at most one unit. The utility of a consumer located at x is

$$V_1 - p_1 - kx^2$$

if he buys from firm 1,

$$V_2 - p_2 - k(1-x)^2$$

if he buys from firm 2, and 0 if he buys from neither firm. V_i represents the “qualities” of the products offered by firm i , while p_i is the price set by firm i . k is a positive constant. For simplicity, assume that the two firms have zero production costs and that they compete by simultaneously setting prices.

(a) Given p_1 and p_2 , compute the location of the consumer who is just indifferent between the two firms (suppose that the market is covered). Explain the intuition of the expression you got.

(b) Given your answer in (a), Write demand function for each firm. Write the profit maximization problem of each firm. Solve the problem and derive the best-response function of each firm. Show the two best-response functions in a graph that has p_1 on the horizontal axis and p_2 on the vertical axis, assuming $V_1 = V_2$ and $k = 1$. Solve for the equilibrium set of prices given that $V_1 = V_2$.

2. Explain predatory pricing and limit pricing. Distinguish between the two.

3. Suppose there is a monopolistic manufacturer selling a single product to two retail firms that compete by playing Nash-in-quantities in a single market. The marginal cost of production for the good is given by c (assume that $c=1$). When the firms are separately owned, the upstream firm (manufacturer) sets a single wholesale price, P^w . The two retail firms each choose the quantity of the good to purchase (conditional on P^w). For simplicity, assume that the downstream firms face no other costs (i.e., no fixed costs, and the wholesale price they pay to acquire the good from the manufacturer is the same). Assume that demand in the downstream market is given by

$$Q = 10 - P \text{ (or inverse demand is } P = 10 - Q)$$

where P is the price charged to the final end-user in the retail market. $Q = q_1 + q_2$

- a) Write down the retailers' profit functions for the two identical retail firm (i.e., π_1^R and π_2^R) and solve for the optimal retail quantities (i.e., $Q^* = q_1 + q_2$) and price (P).
 - b) As the optimal retail quantities (Q^*) derived from a) being the demand function for the manufacturer, write down the manufacturer's profit function (π^W) and solve for the optimal wholesale price (P^W) and the optimal wholesale quantity (Q).
 - c) Compute profits for the manufacturer (π^W) and profits each retailer obtain (π_1^R and π_2^R) when the manufacturer charges the optimal wholesale price and the retailers play their best response in the Nash-in-quantities game.
 - d) Suppose the manufacturer acquired both retailers in a vertical merger. What would be the optimal retail price (P) and quantity (Q) on the market for the merged firm to set? What are profits to the merged firm?
 - e) Compare the total industry profits in parts c) and d), i.e., $\pi^{unmerged}$ and π^{merged} . Briefly discuss the result.
- 4) Explain double marginalization. Why does it become a problem? Recommend methods to solve the problem.
 - 5) Explain Salop's circular model. What do you learn from this model?