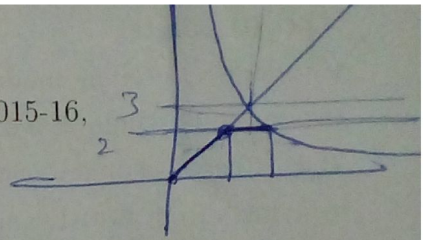


HUL212 - MICROECONOMICS

MAJOR EXAMINATION (**May 09, 2016**), IITD Sem II, AY 2015-16,

Time Allowed: 2 Hours. (Full marks=40)

[There are FOUR questions and you have to ANSWER ALL. Due to the sitting arrangement and large size of the exam venue, it is just impossible to answer all your doubts/clarificatory questions. So DON'T ask questions in the exam hall unless you are SURE to spot an error in the paper. If you can't understand some question, be patient and read again, and write based on whatever you have understood. You should clearly write the question number and sub-numbers you are answering. If you don't, you might miss points even if your answer is correct.]

Q1 [13 points] .

Imagine that Indian Government is thinking to impose quota on the importation of cars in India without imposing restrictions on the construction of foreign-owned car factories in India. This question asks you to evaluate the impact of this policy. Read it carefully before you answer.

The demand for cars in India has the following form: $Q^D = \frac{9}{P}$ and the supply of cars in India takes the following form: $Q^S = P$. The quantity of cars (in million) is denoted by Q and P is its price per unit.

(1a) Imagine the economy is closed to imports. What is the price of cars in a closed economy? What is the quantity of cars sold at this price? In a demand/supply graph indicate the equilibrium price and quantity and show the area representing consumer and producer surplus. (0.5+0.5+2)

(1b) Now imagine that the international price of cars is $P^* = 2$ and there are no restrictions on the number of cars to be imported (open economy case). How many would be produced domestically and how many would be imported? What would be the change in consumer surplus with respect to (1a)? What would be the change in producer surplus with respect to (1a)? (give quantitative answers) (0.5+0.5+1+1)

(1c) The Indian Government imposes a quota on imports of 1 million cars from abroad. What is the price paid by consumers to buy a car in India following the introduction of the quota? Assume that the quota rights are assigned to Japanese car producers. What is the dead-weight loss caused by the introduction of the quota (compared to the open economy case) (1+1)?

(1d) Imagine that, in line with Indian Govt's policy of *'Make in India'*, some Japanese car producers open plants in India to make cars. Imagine for simplicity that the Japanese manufacturers that start producing in India supply a total of 0.5 million cars and that their cost of production is 2 per car. Continuing with the policy of 1 million import quota, what is the price of cars in India following the entry of Japanese producers (show this equilibrium in the graph)? Find out, and indicate in graph, the Indian producer surplus. Does consumer surplus increase? (2+2+1)

$P_1 \, q_1$

$P_2 \, q_2$

Q2 [10 points] .

Consider a Hotelling model with two firms: firm 1 is located at $y_1 = 0$ and firm 2 is located at $y_2 = 1$ [these are two extreme points of a straight line of length unity]. 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, and $(v_2 - p_2 - k(1-x)^2)$ 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 and k is a positive constant. For simplicity, assume that the two firms have zero production costs and that they compete by simultaneously setting prices.

$-2P_1 + P_2 = 0$

$P_1 = \frac{P_2}{2}$

(2a) 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. (1+1)

(2b) Both firms want to maximize their own profit. Can you 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+1+1)

(2c) Suppose that firm 1 increases v_1 by an amount $a > 0$ by investing in quality (so that $v_1 = v_2 + a$). Assume that this quality improvement is costless. Compute the new equilibrium prices after the increase in quality by firm 1 (show in graph). (2)

(2d) Is the 'strategic effect' of the increase in v_1 beneficial or harmful for firm 1? Give intuition. (2)

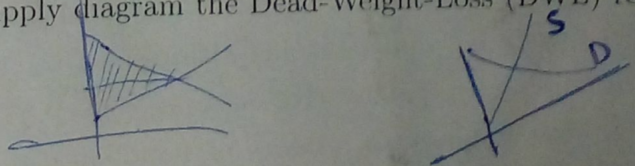
Q3 [12 points] . [Just write to-the-point answer - without explaining too much]

(3a) Give one example in each case of 1st, 2nd and 3rd degree price discrimination. [you have to write clearly as to why they fit in as examples] (3*1=3)

(3b) Give two examples of market failure that you learnt in this course. Also hint at policies to fix them up. (2*2=4)

(3c) Can two-part tariff be efficient? (2)

(3d) Can you show in a demand-supply diagram the Dead-Weight-Loss (DWL) region of a subsidy? Why this is called DWL. (2+1)



Q4 [5 points] .

There are two firms (duopoly) each producing q_i units of a good (i=1, 2). Assume that demand is linear and given by $p = a - Q$ where $Q = q_1 + q_2$. Cost of production is $C(q_i) = c.q_i$ where $c > 0$ is the constant marginal cost of production, $i = 1, 2$. Suppose that each firm must choose either half the monopoly quantity, $\frac{q_m}{2} = \frac{a-c}{4}$ or the Cournot equilibrium quantity $\frac{q_c}{2} = \frac{a-c}{3}$. No other quantities are feasible. Show that this two-strategy game is equivalent to the Prisoner's Dilemma: each firm has a strictly dominant strategy, and both are worse off in equilibrium than they would be if they cooperated. (5)