Microeconomics Exam 18/01/2020

Q1: List and explain the properties of the cost function.

Q2: What is the Hicksian demand? What is its relationship with the Marshallian demand? (explain it using also a diagram).

Q3: What type of perfect Bayesian Equilibrium can we observe in a signalling game? Explain for each type what type of strategies does the informed party adopt and does the uninformed party learn by observing them.

E1: A consumer consumes good x and y always in fixed proportions three x and one y

a) Write a utility function tha represents these preferences and draw its indifference curves
b) Let $\mathbf{p_x}$ and $\mathbf{p_y}$ be the goods'prices and **I** the income, calculate the demands-good for each good.
c) What is the *indirect utility function*? And the *Expenditure Function*?
d) Can we represent this consumption behavior with a composite good z? What would p_z be? Write down the demand for z.
e) Suppose the market is made of 10 consumers with income I=100 and 10 consumers with income I=200, What is the market demand for z?
f) If the market z is $z = 30p_z$ what will be the market equilibrium (price and quantitiy) be?. How much z would each type of consumer demand?
g) Represent this market outcome in a (qualitative) diagram and clearly indicate consumer and producer surplus.

E2: Consider the following two player game

P1/P2	L	R
U	K , 6	6 , J
D	4 , 2	2 , 4

a) What conditions do k and j need to satisfy for both players to have a dominant strategy?
b) Let $k = 2$ and $j = 2$, find all the *Nash Equilibria* of the game (pure and mixed). Write down clearly the equilibrium strategies and payoff.

c) Suppose now that P_1 moves first and P_2 moves second and after having observed the choice of P_1 represent this game in extensive form (i.e game tree) and apply backward induction to find (all) the *Subgame Perfect Nash Eqilibria*.

d) What is the normal form of the sequential game of part c? Find all the Nash Equilibria and explain why some are not Subgame Perfect

E3: A monopolist firm produces output incurring marginal (and average) cost MC (Q) = 5 and faces a market demand $Q_1 = 55 - P_1$

a) Find the monopolist equilibrium and compute the firms profits. Represent it graphically.

b) A second separate market opens up for the monopolist with demand $Q_2 = 70 - 2P_2$. Suppose he can price discriminate, what price will he change in Market 2? What are the total profits?

c) Suppose now the consumers find a way to transport goods from market 2 to market 1 at a unit cost of 4. Where will they buy? Compute the monopolist profits in this case.

d) Can the monopolist increase its profits by changing the prices found in 1 and 2 in the two markets? What are the new profits? (hint: keep in mind that buyers can still transport the good from market 2 to market 1 if the indifference in prices is larger than the cost of transportation.