Department of Economics **February 2, 2014**

Economics 205
UNIVERSITY OF VICTORIA
Managerial Economics
Spring 2014

Assignment 2

Due: Friday, February **7, 2014**, **3 pm.** (In the box marked "ECON 205" near the Economics Department Office)

Question 1: A private research firm is asked to predict what will happen to the price and output of electric-powered vehicles under the conditions below. What are your predictions? For each part, sketch a graph showing the appropriate demand and supply analysis. ***(4 marks)***

a) A major natural disaster destroys a large hydro producing dam in B.C.

b) The scientists at the University of California discover a way to double the efficiency of battery powered vehicles.

c) The CMA announces that inhaling fossil fuel emissions can increase the risk of cancer.

d) The price of gasoline falls.

Question 2: (3 marks)

a) How does imposing a price ceiling affect the number of new cancer preventing drugs in the pharmacological market? (Suppose there is a legal limit as to the amount a drug company can charge for its product.)

b) When there is a price ceiling, can all potential cancer patients get the medication?

c) Who loses with price fixing in this market?

Question 3: (6 marks) The demand and supply functions for a product are determined to be:

$$Q_d = 275 - 15P + 0.55M + 22P_r$$

$$Q_s = 50 + 12P - 20P_I + 25F$$

where

P is price per unit of time
M is consumer income
P_r is price of the good related in consumption
P_I is the price of an input used in producing the good and
F is the number of firms in the industry.

a) Initially M=56,365 and Pr=100. Determine the equation for the demand function.

b) Determine the inverse demand function. (Re-arrange the demand equation in terms of P)

c) Initially assume Pi=15, F=25. Determine the equation for the supply function.

d) Determine the inverse supply function.

e) If price is fixed at $900, will there be a shortage or surplus and by how much?

f) **Determine equilibrium price and output.**

Question 4: (3 marks) The Tomato Grow-crop Distributors concludes that the demand function for its product is:

$$Q=80-97P+8P_R+ 0.75\ M$$

where Q is the quantity demanded of its product, P is the price of its product, P_R is the price of its rival's product, and M is per capita disposable income (in dollars). Currently, P=$8, P_R=$12 and M=$4535.

a) What is the price elasticity of demand for the firm's product?

Use price elasticity of demand formula for a point: $\left(\frac{\partial Q}{\partial P}\right)\left(\frac{P}{Q}\right)$

b) What is the income elasticity of demand for the firm's product?

(Use income elasticity of demand formula for a point: $\left(\frac{\partial Q}{\partial M}\right)\left(\frac{M}{Q}\right)$.)

c) What is the cross elasticity of demand between its product and its rival's product.

(Use Cross elasticity of demand formula for a point: $\left(\frac{\partial Q}{\partial P_R}\right)\left(\frac{P_R}{Q}\right)$.)

Question 5: Suppose total income to spend on two products is $72. The price of the first product is P_x=$4 per unit and the price of the second product is P_y=$6 per unit. (5 Marks)

A) Determine the formula for the budget constraint. (1 Mark)

B) What is the $MRS_{y,x}$? (2 Marks)

C) Illustrate the consumption decision with a diagram. (You will not be able to show the exact consumption bundle.) Make sure you include the intercepts of the budget constraint and an indifference curve. (2 Marks)

Question 6: Diego budgets a total of $170.25 to spend on two life comforts, foot massage and sports pedicure. Any massage he cannot undertake in combination with a pedicure is useless. Similarly, any pedicure that he cannot consume with a foot massage is useless. If the price of a massage is $33.50 and the price of a pedicure is $23.25, how many units of each good will he purchase? Draw the indifference curve and point of consumption that represents the consumption choice. (4 Marks)