



uOttawa

École des sciences économiques

Faculty of Social Sciences

Département de science économique  
Department of Economics

**ECO 1104B INTRODUCTION TO MICROECONOMICS  
Second Midterm Examination**

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**INSTRUCTIONS**

As promised, I made quite explicit in class the response to almost every question.

- a) The allotted time is 70 minutes. This examination counts for 20 % of your course grade. It consists of short answer questions and problems, and you should answer all of them. There are a total of 50 points.
- b) You may not consult with any written materials whatsoever, including other students' papers, and no conversation is permitted while the examination is in progress. Furthermore, no smartphones or programmable calculators are permitted. Simple calculators are permitted, and students whose native tongue is not English may use an electronic dictionary. Any contravention of these rules will be treated as an infraction to the honour code of the university.
- c) I do not anticipate that you will be pressed for time, so please do not panic.
- d) All of the questions which follow are straightforward, and most can be answered in two sentences. The responses that I hope to elicit have been repeated by me several times in class. Please take a minute to concentrate on the question being asked, as opposed to writing down everything which immediately comes to your mind about a certain topic. I have tried to pose the questions in such a way that you focus correctly.
- e) Write only in the space provided. For most of the questions that follow, you should write in sentences.
- f) Turn off all smartphones and the like, and put them out of reach.

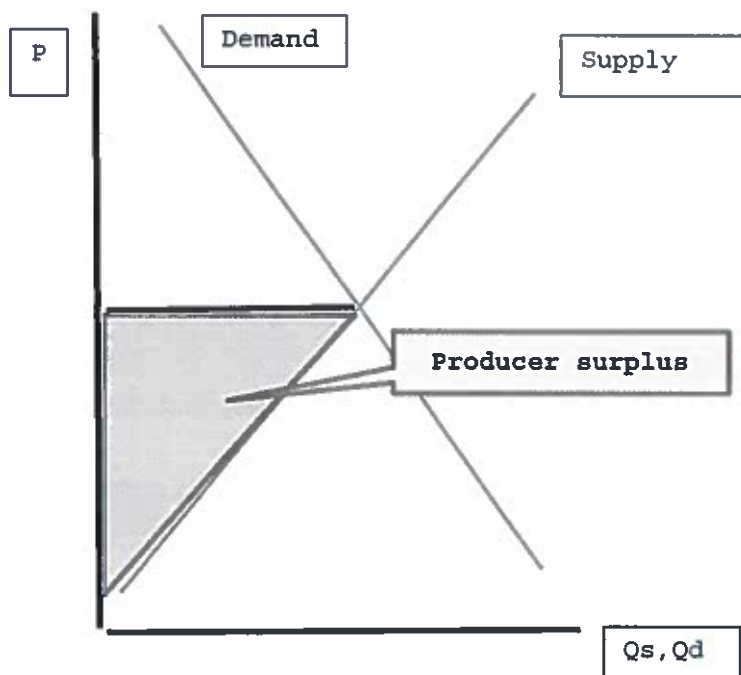
**PART A: efficiency of markets (11 points)**

1)

a) Identify the quantity of consumer surplus and explain its significance (3 points)

**Given a certain price and quantity, it is the difference between the consumer's willingness to pay for a range of consumption units and the requirement to pay for them. It is a measure of consumer welfare or well-being.**

b) (8 points) Consider the market for smart-phones, which is depicted in the graph below.



i) Depict the efficient level of output on the graph.

**It is the equilibrium quantity produced by the intersection of supply and demand.**

ii) How much deadweight loss exists at this level? Explain your response.

**None, because the free-market equilibrium is the efficient level of output.**

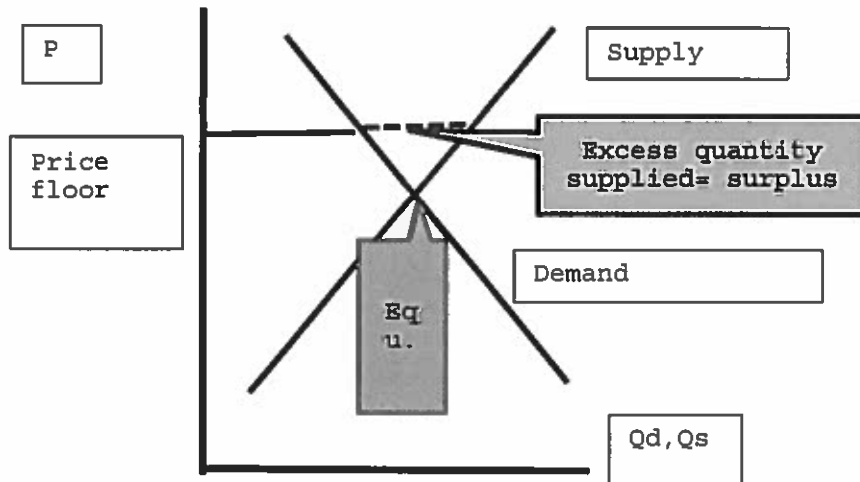
iii) Explain what is meant by the efficient level of output.

**It is the level of output where total surplus = consumer surplus + producer surplus, is maximized. At any other level of output, consumer surplus might rise but producer surplus will fall, or producer might rise but consumer surplus will fall. Either way, the net effect of moving away from the efficient level of output is that total surplus will fall.**

iv) Show the level of producer surplus on the graph.

### PART B: Government Intervention (10 points)

2. (6 points). Consider the market for paper calendars, which is depicted in the graph below. Assume that it is originally in state of equilibrium.



- Now assume that a price floor is applied that is binding, meaning that it will affect the functioning of the market. Depict this situation on the graph and describe it verbally, ensuring that you label the appropriate quantities.
- We would not expect for this situation to persist indefinitely, as we would expect an adjustment process to be triggered. Explain this adjustment process in words.

**If the government purchases the surplus and thus removes it from the market, the situation can persist indefinitely, although it is very wasteful and costly for taxpayers. Otherwise, we would expect that certain producers would undermine the price floor by selling their surplus goods to buyers at lower prices on the side. This price-cutting scenario places downward pressure on the transactions price. As price falls, quantity supplied falls due to the law of supply. As price falls, quantity demanded increases due to the law of demand. Eventually the free-market equilibrium is restored.**

- A price floor is almost always set by governmental regulation. What is typically the motivation of the government?

**It is to make the producers better off. In goods economics language, it is designed to transfer surplus from consumers to producers. It is usually motivated for political reasons. Of course the producers and the government always deny the fact that consumers are losing surplus.**

3. More generally, economists tend to be quite critical of interventions such as price floors, price ceilings, and production quotas. Explain in general terms their reasoning. In other words, what did I say was the economic 'moral of the story' regarding these policies that are designed to

move the (quantity,price) combination away from the free-market equilibrium? Two sentences will suffice. (4 points)

**Tampering with prices distorts the choices of both suppliers and demanders. Both sides of the market react to price changes by altering their behaviour, and they do so in a way that works against the initial objective of making one party better off. Market imbalances in the form of surpluses or shortages always arise. Trying to defy the natural forces of supply and demand always has unintended – but predictable - consequences. In class I drew an analogy between defying the laws of supply and demand and defying the law of gravity. The price ceiling will levitate upwards towards the equilibrium price. The price floor will gravitate downwards towards the equilibrium price.**

### **PART C Consumer Behaviour (9 points)**

4. (5 points)

a) We study consumer behaviour because it is the foundation of the demand curve. Allow me to re-introduce you to a consumer named Petra, who has a discretionary income amounting to \$ X per month to spend on two goods, DVDs (price = \$ Y) and hardcopy books (price = \$ Z).

a) Explain in words how she will choose the quantities to purchase per month of both goods. Pay attention to the roles of Petra's total utility and the budget constraint that she faces. You need not write down the algebraic expression for the budget line, and so you do not need to use the letters 'X', 'Y', and 'Z' for anything.

**Petra, who by nature is greedy, seeks to maximize her level of total utility, or satisfaction, per month, given her budget constraint.**

b) In economic terms, what does the total utility function represent? One meaningful phrase will suffice.

**Her total utility level is derived from consuming certain quantities of goods X and/or Y per month. It reflects pleasure, well-being, or satisfaction.**

c) In economic terms, what does the budget constraint represent? One meaningful phrase will suffice.

**It is the locus of all combinations of goods X and Y that she can afford to buy per month given her income of \$ Z per month. It can be interpreted as the consumption possibilities frontier, and is analogous to the production possibilities frontier.**

5. State the law of diminishing marginal utility and explain its relationship with the demand curve. (4 points)

**It deals with the consumption function, which relates utility to the number of units consumed per time period. After a certain level of consumption has been reached, the**

marginal utility, which equals the change in total utility divided by the change in the quantity consumed, starts to diminish. In other words, each additional unit consumed adds less additional utility than did the preceding unit consumed. This implies that as the quantity consumed increases, the price that the consumer is willing to pay for the marginal unit consumed is lower and lower for the marginal unit consumed. Combine an increasing quantity consumed with a falling price level, and you have the essence of the law of demand, which is graphically represented by a demand curve with a negative slope.

#### **PART D The Costs of Production (20 points)**

6. (4 points) Identify the law of diminishing marginal product and explain its significance. I will tell you this much: it has something to do with the marginal cost function and the marginal cost curve.

**It concerns the production function relating output to input. Given a fixed factor of production, after a certain level of output has been reached, the marginal product, which is the change in total product divided by the change in the variable factor (usually labour), diminishes in value (but usually remains positive). In other words, equal increments of the variable factor of production generate smaller and smaller increments to output. Its significance is that coupled with a fixed wage for labour, the marginal costs of production rise with the level of output. Geometrically, this gives a positive slope for the marginal cost curve.**

7. (4 points) Explain the difference between accounting profits and economic profits, and why economists are usually more interested in the latter.

**Accounting profits = total revenues – total explicit costs; economic profits = accounting profits – total implicit costs. The implicit costs of production are the opportunity costs of the factors of production. Accounting profits indicate whether the firm is solvent or not. Economic profits indicate how the firm's profit margin compares to the normal rate of return, which is kind of like the average rate of profit across all industries in the economy. If economic profits > 0, then the firm is earning more than it would if the factors of production (especially capital) were to be deployed in other industries. The factors of production should not be allocated elsewhere. If economic profits < 0, then the firm is earning less than it would if the factors of production (especially capital) were to be deployed in other industries. The factors of production should be allocated elsewhere.**

8. (8 points) The table below contains figures (denominated in \$) for the short-run costs of a firm. Fill in the blanks. For each column, show one of our calculations in the space below.

output	Total fixed costs	Total variable costs	Total costs	Average total costs	Marginal costs	Notes regarding MC – interval for Q
0	100	0	100	XXXXXX	XXXXXX	
3	100	20	120	40	6.7	0 to 3
7	100	40	140	20	5	3 to 7
13	100	60	160	12.3	8.3	7 to 13
22	100	80	180	8.2	2.2	13-22

TFC are constant irrespective of the level of output, and so they are always = 100; where output = 0, TVC = 0;  $TC = TFC + TVC$ ;  $ATC = TC / Q$ ;  $MC = \Delta TC / \Delta Q$ . Note that at these low levels of output, diminishing returns to the variable factor of production have not set in yet, and so marginal costs are not increasing with the level of output (until higher levels of output are reached).

9. On the axes below, show the long-run average cost curve, which the textbook calls the long run average total cost curve. Indicate the portion that corresponds to a constant returns to scale technology of production. Label the two axes. (4 points)

