NAME:

**EC 131 - Principles of Microeconomics**
**Fall 2012**

**FINAL EXAM**

**All questions should be answered in the following pages**. Nothing here requires a very long answer. Graphs many times help, as does neatness.

You have 75 minutes to complete this exam. Mark **clearly** your answers for the multiple choice questions in their respective letters. If more than one alternative is marked you will not get any point from that question. You can use pencil, though if you do so you won't be able to dispute the grading for that question afterwards. **You MUST return this exam**. Each question clearly states how many points it is worth. The exam is worth 220 points.

The following definitions may be used throughout the exam:

ATC - Average Total Cost
AFC - Average Fixed Cost
AVC - Average Variable Cost
MC - Marginal Cost
MR - Marginal Revenue
Q - Quantity

**Marginal Cost (MC)** is the derivative of the total cost (TC) with respect to quantity (Q). Example:

$TC = 300 + 5Q + 10Q^2$
then:
$MC = 5 + 20Q$

**Marginal Revenue (MR)** is the derivative of the total revenue with respect to quantity (Q). Example:

$TR = 100Q - Q^2$
then:
$MR = 100 - 2Q$

*Use your time wisely.*

*Consider the following productivities for Orhan and Samson in producing Corn and Pork for questions 1 and 2:*

| | Minutes needed to make 1 | |
|---|---|---|
| | **Bushel of Corn** | **Pound of Pork** |
| **Samson** | 20 | 12 |
| **Orhan** | 15 | 10 |

**Question 1 - (10 points)** Suppose that Samson can work 6h per day and Orhan can work 8h per day. Fill the blank spaces below with an **example** of an **efficient** production for each worker:

| | **Bushels of Corn** | **Pounds of Pork** |
|---|---|---|
| **Samson** | **9** | **15** |
| **Orhan** | **16** | **24** |

**Question 2 - (10 points)** Fill the following blank spaces:

**Samson** has **comparative advantage** in the production of ____**Pork**_____

**Orhan** has **comparative advantage** in the production of ____**Corn**_____

In order to trade to be beneficial for both, the **traded price of pork** must be between:

___**3/5**_____ and _____**2/3**_____ **bushels of corn**.

**Question 3 - (5 points)** Suppose that the equilibrium price of French fries rises while the equilibrium quantity falls. The most consistent explanation for these observations is (mark the **correct** item):

a - An increase in the price of onion rings (a **substitute** to french fries)
b - A decrease in the price of onion rings
**c - An increase in the price of potato bread (a substitute in production to french fries)**
d - A decrease in the price of potato bread

**Question 4 - (5 points)** The price elasticity of demand for good X is **0.3**. Mark the **correct** alternative:

a. Good X may be a diamond ring
**b. In the long-run the price elasticity of good X could be 0.5**
c. The price elasticity given for good X must be a **long-run** elasticity
d. None of the above is correct

**Question 5 - (5 points)** You are the CEO of a bagel chain store, which has a monopoly in the sales of bagels, and your marketing department comes to you with an estimate of **1.3** for the **price elasticity of demand** for bagels. You can, **based only on that information**, conclude that: (Mark the **correct** alternative)

**a. If you increase the unit price of your bagels, your total revenue will decrease**
b. If you increase the unit price of your bagels, your total revenue will increase
c. If you increase the unit price of your bagels, your total revenue will remain the same
d. We don't have enough information to answer this question

**Question 6 - (15 points)** Consider the US market of donuts. For each scenario presented below, suppose that the market starts from the long-run equilibrium price and quantity, and write whether the price and quantity change will be **INCREASE**, **DECREASE** or **AMBIGUOUS**

a. An european chain of donuts starts its operation in the US with 100 stores

Price: DECREASE

Quantity: INCREASE

b. A federal law mandates the reduction of use of fat in donuts. As a consequence, costs of production of donuts rise and many consumers substitute donuts for bagels

Price: AMBIGUOUS

Quantity: DECREASE

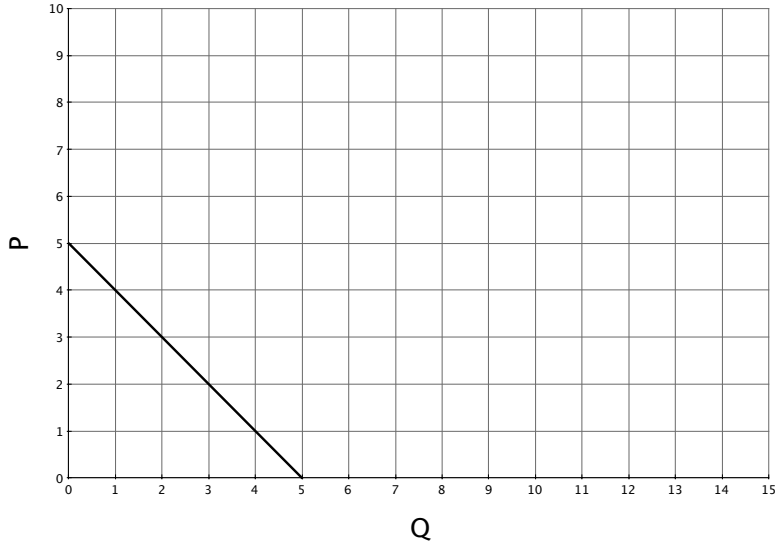
c. The canadian government gives tax incentives for donut bakers to move to Canada, and as a result many leave the US market. (*Hint: what will happen to the wage paid to donut bakers in the US?*)

Price: INCREASE

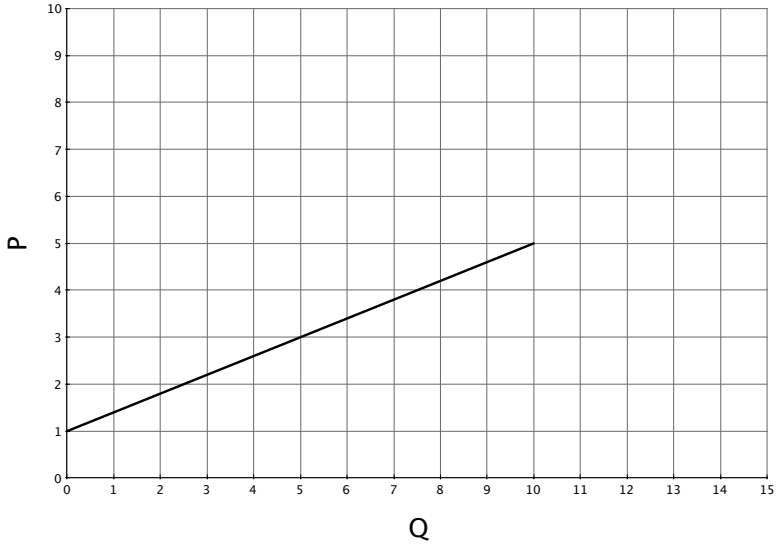
Quantity: DECREASE

*Consider the following **demand** and **supply** curves for 3 different consumers and 3 different firms in the market of iPhone cases, which is **perfectly competitive**, for questions 7 and 8.*

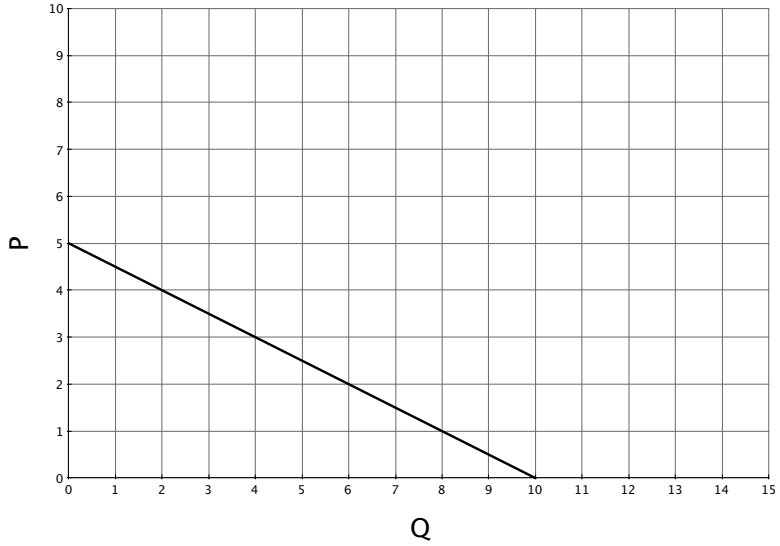
**Consumer 1**



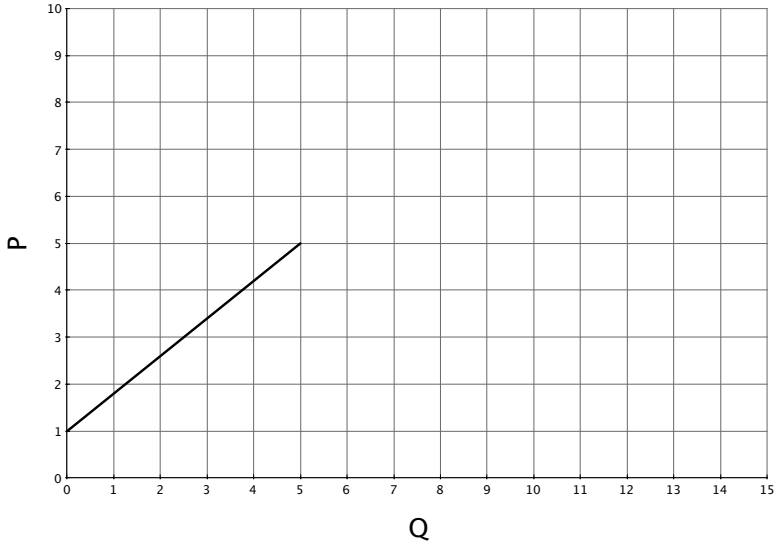

**Firm 1**



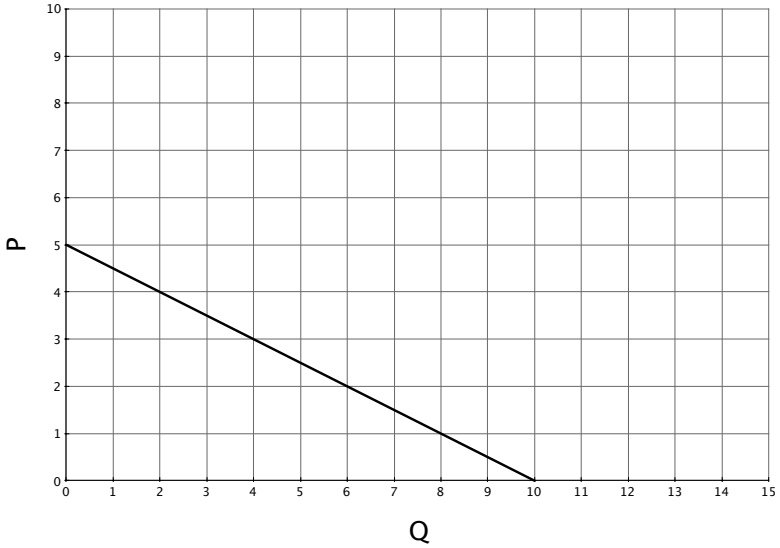

**Consumer 2**



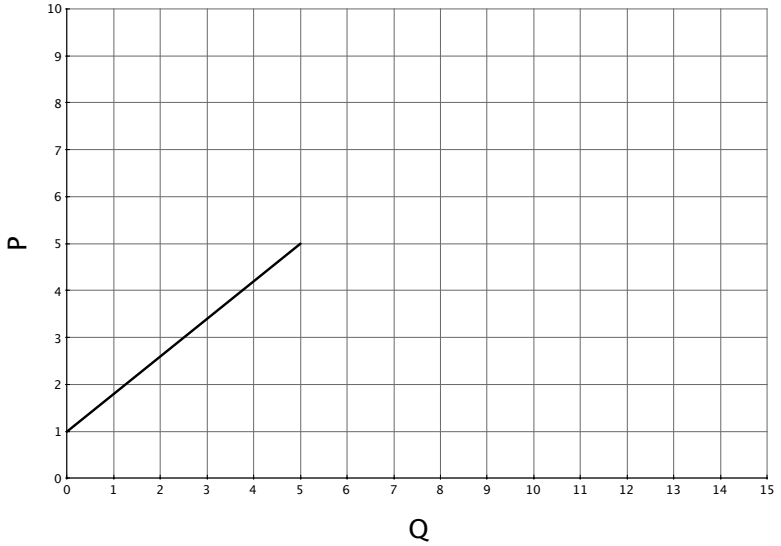

**Firm 2**



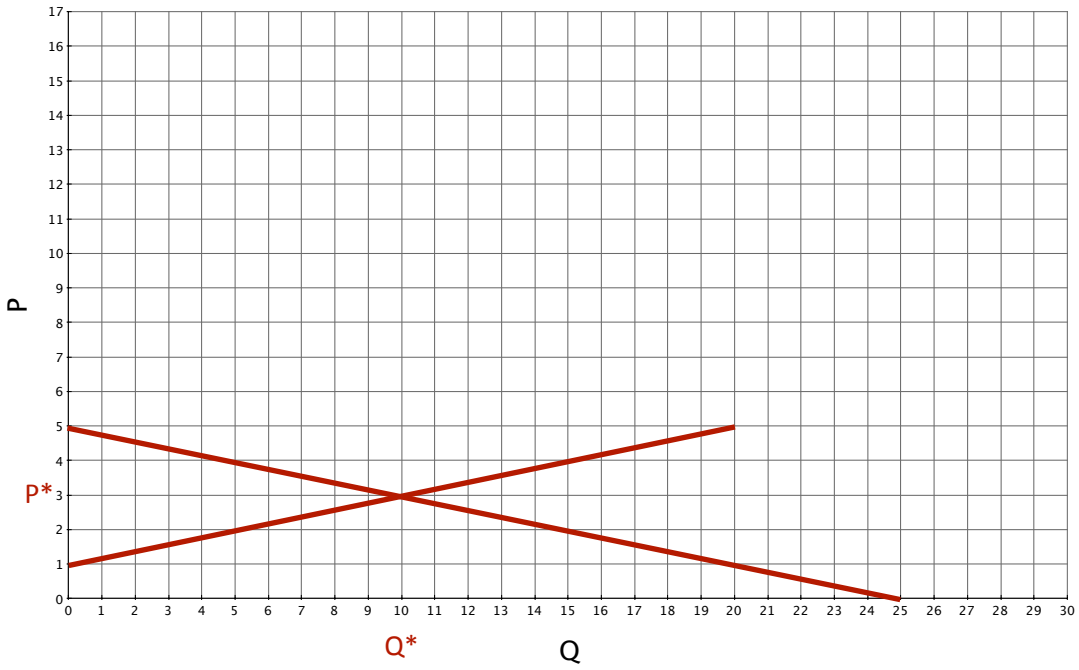

**Consumer 3**



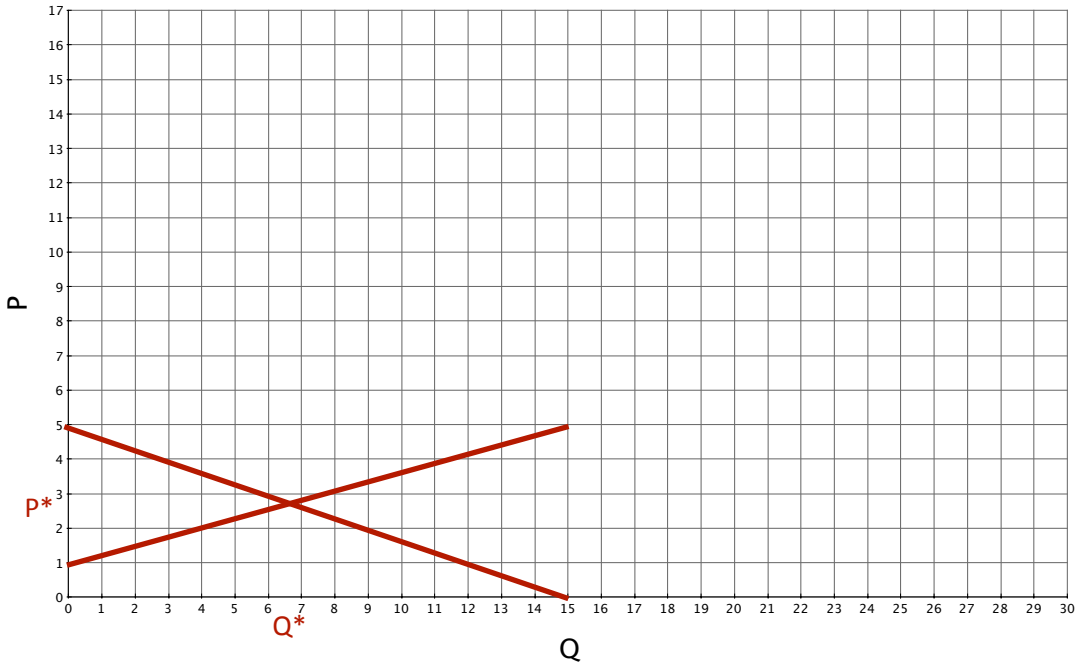

**Firm 3**



**Question 7 - (5 points)** Draw in the box below the market demand and market supply curves for the market for the market of iPhone cases. **Pay special attention to the values of the intercepts**. Indicate the **market equilibrium price** and **quantity**.



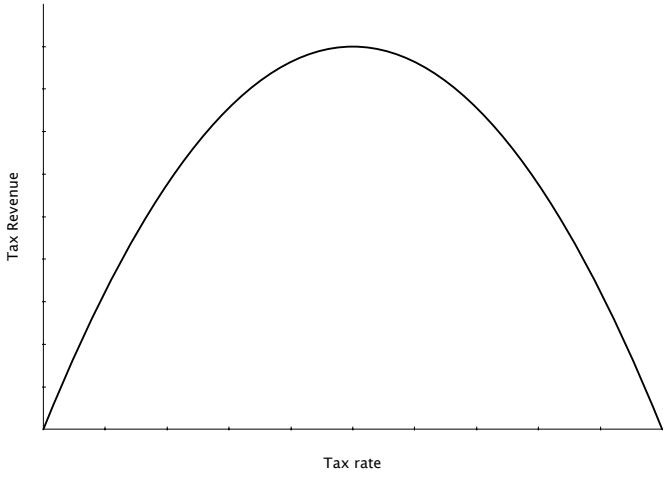

**Question 8 - (5 points)** Suppose that **consumer 2** and **firm 2 exit the market**. Repeat question 7 for this new economy.



**Question 9 - (5 points)** The equilibrium price of cheese is **$5** per lb. The price-elasticity of demand for cheese is **1.3**. The price elasticity of supply of cheese is **1.5**. Suppose that the government wants to impose a tax of **$1** per lb of cheese, to be paid for by the sellers. Mark the **incorrect** alternative:

a. The tax will lead to a decrease in consumption of cheese
b. If the tax was levied on the consumers, the consumption of cheese would be the same than if the tax was levied on the sellers
c. The deadweight loss generated by the tax would be lower if the elasticities were 0.5 and 0.7 (instead of 1.3 and 1.5)
**d. The suppliers will pay a bigger share of the tax burden**

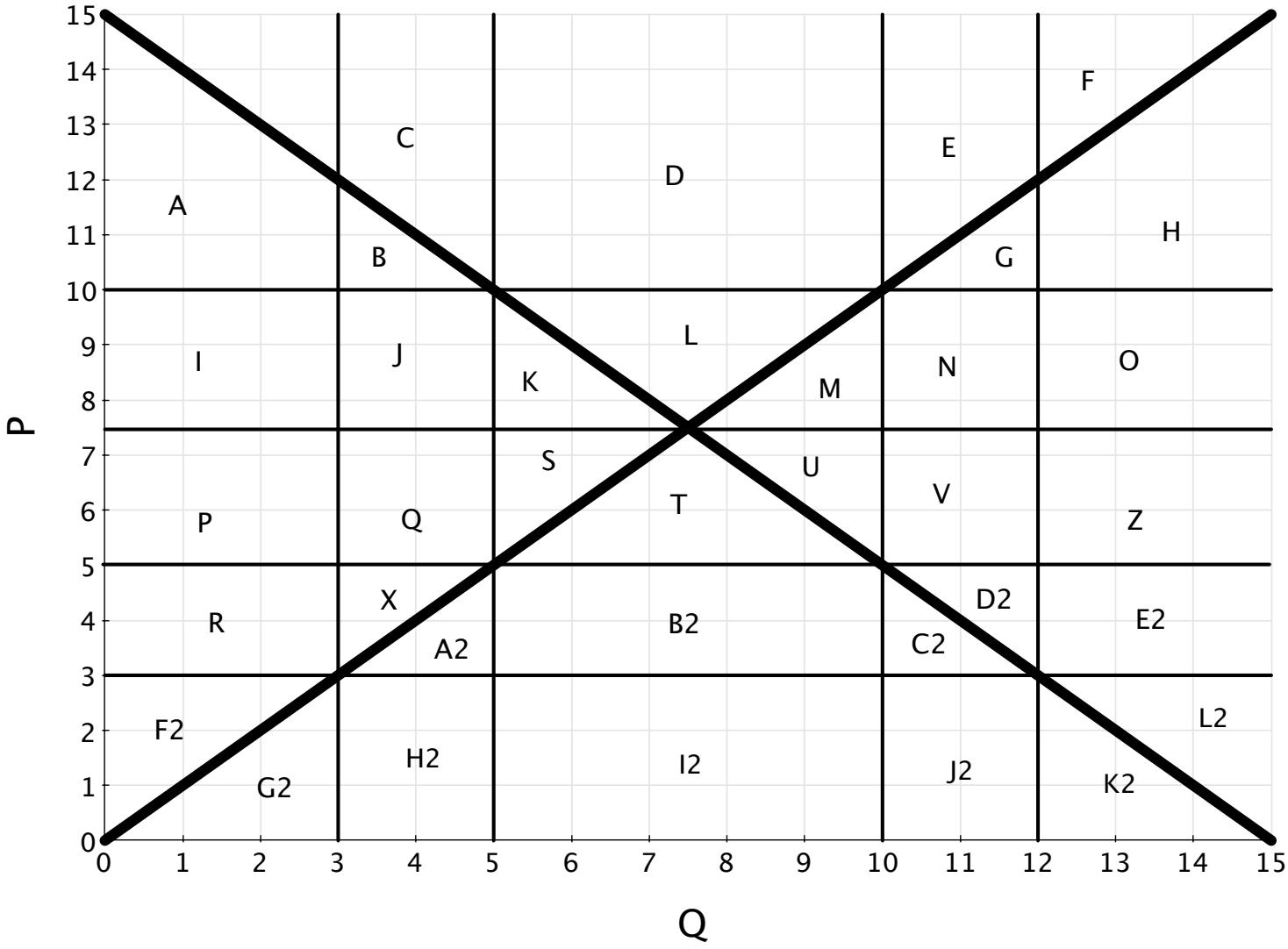
*While studying taxation, we saw the curve below, called the Laffer curve, that shows how tax revenue changes with the value of the tax levied. Consider it when answering question 10:*




**Question 10 - (5 points)** One of the consequences of the Laffer curve is that in general it is possible to obtain the same tax revenue from two different tax rates. Let **t** and **t'** be two such rates where **t>t'** and both yield the same tax revenue. Mark the **incorrect** alternative:

a. The consumer surplus under **t** is lower than under **t'**
b. The deadweight loss under **t** is higher than under **t'**
c. The producer surplus under **t** is lower than under **t'**
**d. It is necessary to know the elasticities of supply and demand in order to determine the items above**

*Use the following graph of a market with its demand and supply curves in bold thick line for questions :*




The following questions should be answered directly in the boxes in front of them. **Write your welfare analysis answers as summations of the letters in the graph above**. **No explanations are necessary**. Example: A+B+C. **If the answer is ZERO, indicate so by writing "ZERO"**.

**Question 11 - (10 points)** Suppose that markets are free, without taxes and closed to international trade. Indicate the areas corresponding to the following values:

| | |
|---|---|
| **Consumer Surplus** | **A+B+I+J+K** |
| **Producer Surplus** | **P+Q+S+R+X+F2** |

**Question 12 - (10 points)** Suppose now that the government imposes a **tax on producers of $5 per unit sold**. Indicate the areas corresponding to the following values:

| | |
|---|---|
| **Consumer Surplus** | **A+B** |
| **Producer Surplus** | **R+X+F2** |
| **Tax Revenue** | **I+J+P+Q** |
| **Deadweight Loss** | **K+S** |

**Question 13 - (10 points)** Suppose now that the government institutes a price ceiling of **$3**. Answer the question below and indicate the areas asked:

Is the price ceiling binding? If so, will there be a surplus or a shortage? By how many units?

**Yes. There will be a shortage of 9 units.**

| | |
|---|---|
| **Consumer Surplus** | **A+I+P+R** |
| **Producer Surplus** | **F2** |
| **Deadweight Loss** | **B+J+Q+X+K+S** |

**Question 14 - (10 points)** Suppose that the country **opens to trade and the world price is PW=$3.00** .

Is this country going to **import** or **export** that good?

| **Import** |
|---|

Indicate the areas corresponding to the following values:

| | |
|---|---|
| **Consumer Surplus** | **A+B+I+J+K+P+Q+S+T+R+X+A2+B2+C2** |
| **Producer Surplus** | **F2** |
| **Gains from Trade** | **T+A2+B2+C2** |

**Question 15 - (10 points)** Suppose that after opening to trade as in question 14 the government decides to impose an **import quota of 5 units**. Indicate the areas corresponding to the following values:

| | |
|---|---|
| **Consumer Surplus** | **A+B+I+J+K+P+Q+S+T** |
| **Producer Surplus** | **F2+R+X** |
| **Gains from Trade** | **T+B2** |
| **Deadweight Loss** | **A2+C2** |

**Question 16 - (5 points)** Which of the following statements is **not correct**?

a. Fixed costs are constant
b. Variable cost changes as output changes
c. **Average fixed costs are constant**
d. Average total costs are typically u-shaped

**Question 17 - (10 points)** Fill the missing values for the following costs:

| Output | FC | VC | TC | AFC | AVC | ATC | MC |
|---|---|---|---|---|---|---|---|
| 0 | **1080** | **0** | **1080** | ----- | ----- | ----- | **400** |
| 1 | 1080 | 400 | 1480 | **1080** | **400** | **1480** | **450** |
| 2 | **1080** | **850** | **1930** | **540** | **425** | 965 | **500** |
| 3 | **1080** | **1350** | 2430 | **360** | **450** | **810** | 550 |
| 4 | **1080** | **1900** | **2980** | **270** | 475 | **745** | ----- |

**Question 18 - (5 points)** You own a company which has a **monopoly** in the market of hockey helmets and hired an economist to figure out what would be the best way to increase your profits. After a couple of weeks, he comes back with the following information:

- The fixed cost is $50.
- When producing 99 units, AVC was $2
- When producing 100 units AVC was $2.1
- The increase in revenue from the increase from 99 to 100 units was $9

Based only on the information provided, mark the **correct** item:

a. It would be better to shut-down in the short-run
b. The quantity that will maximize profit is bigger than 100
**c. Profits increase if quantity is reduced from 100 to 99**
d. You should make the economist recalculate those values, because they must be wrong

**Question 19 - (5 points)** Your company also has a division that produces toothpaste, a **monopolistically competitive** market. The economist gave the following information regarding that market:

- The fixed cost is $500.
- The marginal cost is constant and equal to $2
- When producing 100 units ATC was $5
- The increase in revenue from the increase from 99 to 100 units was $4

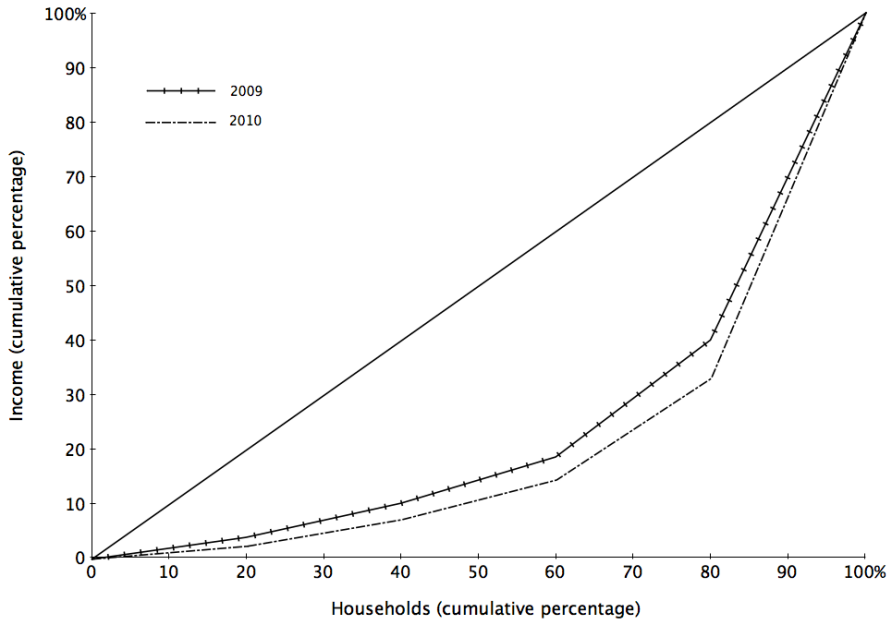
Based only on the information provided, mark the **correct** item:

a. Profits when producing $100 are negative
b. The quantity that will maximize profit is bigger than 100
c. Profits increase if quantity is reduced from 100 to 99
**d. You should make the economist recalculate those values, because they must be wrong**

**Question 20 - (5 points)** On the subject of **tradable pollution permits (TPP)**, mark the **incorrect** item:

a. One negative aspect of TPPs is that there is no incentive to the market as a whole to reduce total emissions to below the total amount of permits distributed
**b. They will lead the market to emit the socially efficient amount of pollutants**
c. Firms that have a relative low cost of reducing emissions will earn higher profits by selling permits
d. A firm that has a cost of $500 per ton of emissions reduced will accept to buy permits sold for $400 per ton of emissions

*Use the graph below for question 21:*



**Question 21 - (5 points)** Suppose that the Lorenz curve in page 11 was made for a country with **only 10 residents**, and that the **total income earned by all of them was $2,000 in both 2009 and 2010**. Mark the **correct** alternative:

a. These curves cannot be consistent with a population of only 10 residents
b. The poorest 3 individuals, combined, earn, combined, more than **$300**
c. The Gini coefficient in 2009 is higher than in 2010
**d. The richest individual in this country earns more than $400**

*Use the following values for the willingness to pay for these 4 individuals per acre of a public park (a **public good**) in question 22:*

| Acres | Utku | Tayfun | Hideo | Uzi |
|---|---|---|---|---|
| 1 | $30 | $21 | $25 | $15 |
| 2 | $21 | $15 | $21 | $10 |
| 3 | $15 | $10 | $15 | $5 |
| 4 | $10 | $0 | $5 | $0 |

**Question 22 - (5 points)** Suppose that the cost of building a park is of **$40 per acre**. **Consider the efficient allocation in this market.** Supposing that the government will pay for the park by sharing the cost of it equally among the four individuals (that is, each one will pay a tax of **$10 per acre**), mark the alternative that shows, in order, the **number of acres produced**, **Utku's consumer surplus**, and **Uzi's consumer surplus**:

a. 0 , $0 , $0
b. 3 , $66 , $25
**c. 3 , $36 , $0**
d. 2 , $36 , $0

**Question 23 - (30 points)** Consider a profit maximizing firm, in a **perfectly competitive market**, with the following total cost (TC) function:

**$TC = 3 + 3Q + 0.2Q^2$**

a) Find the expressions for the Marginal Cost (**MC**), Average Total Cost (**ATC**), Average Fixed Cost (**AFC**) and Average Variable Cost (**AVC**) for this firm

b) Suppose that the market price is P=$7.00. Find the quantity produced (**Q**), Total Revenue (**TR**), Total Cost (**TC**) and and **Profit** for that firm at that price. Will the long-run price be higher or lower than $7.00? **Justify** (based only on the results from this item b) )

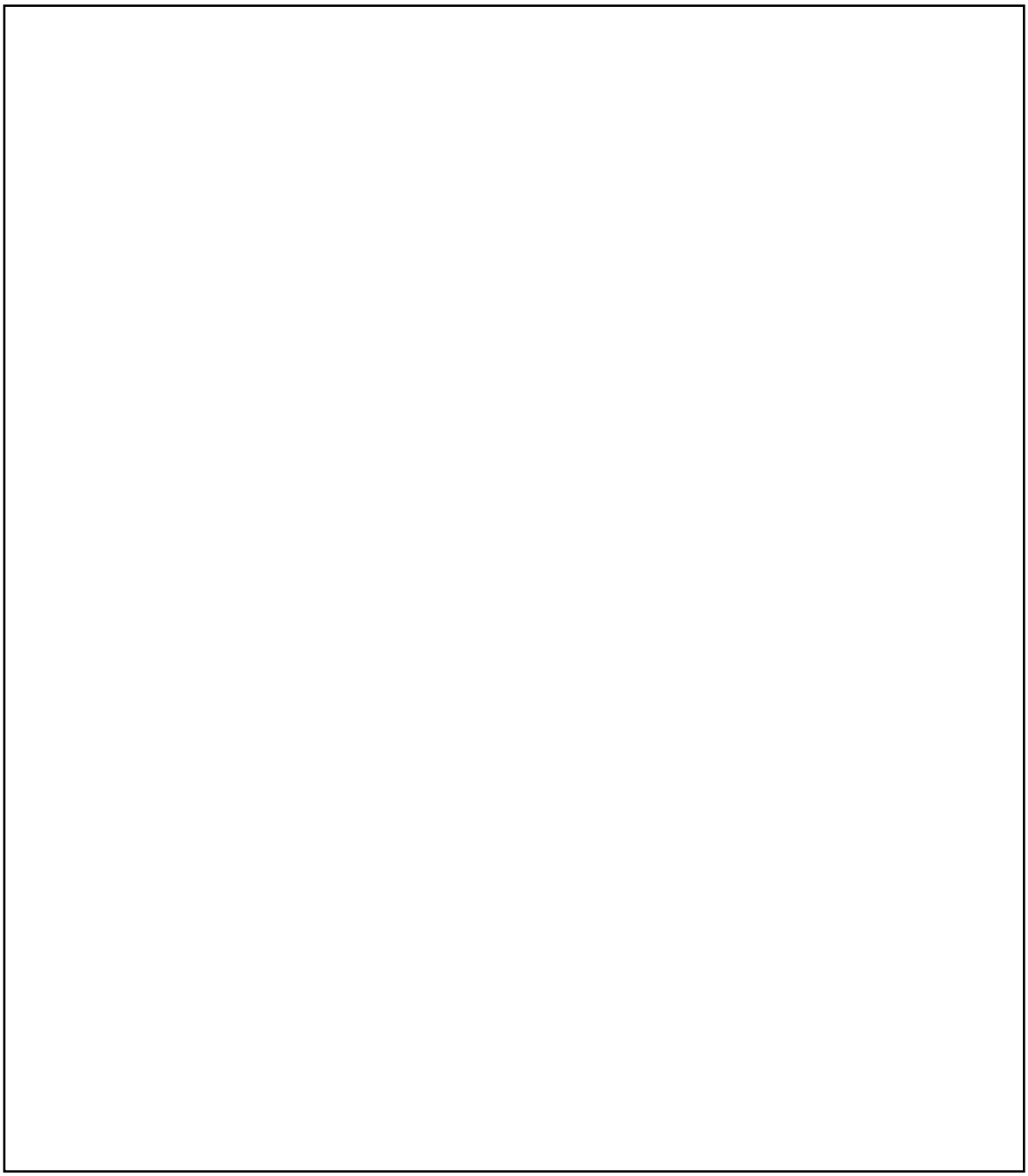
c) Find the **long-run** quantity produced (**Q**) and price (**P**) for this market.

**Question 24 - (30 points)** Consider now a profit maximizing firm, in a **monopolistically competitive market**, with the **same total cost function as the firm in question 21**, facing the following inverse demand curve:

**P = 6-0.4Q**

a) Find the quantity produced (**Q**), the price (**P**) and the **Profit** obtained by this firm

b) Plot a graph with the Demand Curve (**D**), the Marginal Revenue curve (**MR**) and the Marginal Cost curve (**MC**). Write down carefully and precisely the values at the intercepts. Point out the areas representing the Consumer Surplus (**CS**), the Producer Surplus (**PS**) and the Deadweight Loss (**DWL**).



c) Will this firm produce more, less or the same quantity in the long-run? Justify.

**BONUS QUESTION** - (Optional)

Choose an integer number between 0 and 100. If the difference between your number and half of the average number among all numbers given by the class is at most 3 you get an extra 15 points in this exam. If more than one student chooses the same number in the correct range, the 15 points will be divided among them

Example 1: Average number given by the class: 50. Half of the class average is 25. If your guess is 27 and nobody else guesses 27 you get **extra 15 points**.

Example 2: Average number given by the class: 50. Half of the class average is 25. If your guess is 23 and other two student guess 23, all of you who guessed 23 get **extra 5 points**.

Your number: [ ]