

ECONOMIA I

Additional questions “Final exam”: Part II-3; Part III-3b); Part IV - 3

<u>Frequência:</u> alunos em avaliação contínua <input type="checkbox"/>	
<u>Exame:</u> única <input type="checkbox"/>	alunos em avaliação
<u>Nome:</u>	
Nº	Turma

1. The government increases the VAT in the restaurant industry from 13% to 23%.
 - a) Present graphically the effect of the tax increase on the market. What effect does the change have on the market equilibrium?
 - b) Do you think it will be the consumers or the producers who will bear the increase in the tax? On what does the distribution of the tax burden between the two sides of the market depend?

PART II: Consumer Theory (6,0 V)

1. Tiago studies for the Economics I exam. In order to get a good grade he decides to spend 200€ on lessons (good x) and books (good y). Each lesson costs 20€ and each book costs 10€. Tiago's utility function is given by

$$U = x^{0,5} y^{0,5}.$$

- a) **(1,0 V)** Find a general expression for Tiago's indifference curves and explain what they represent.

- b) **(1,0 V)** Calculate the Marginal Rate of Substitution when $x=1$ and $U=2$. Interpret your result.

- c) **(0,5 V)** What is his optimal consumption basket? Present the solution graphically.

- d) **(1,0 V)** Show that the marginal utility from consumption of x and the marginal utility from consumption of y are decreasing. What is the economic intuition behind this result?

Nome:

Nº

Turma

2. Between 2010 and 2011 the average monthly income in Portugal decreased from 800€ to 700€. In 2010, each Portuguese went on average to one concert in a month. In 2011, this average dropped to 0.8 concerts per month.

a) **(0,75 V)** Determine the income elasticity of demand for concerts using the *ceteris paribus* hypothesis. Classify the good.

b) **(0,75 V)** It is predicted that in 2012 the average income will drop by another 10%. Calculate the effect of this change on the quantity demanded of concerts.

3. **(1,0 V) [Question for the FINAL EXAM evaluation]** True or false: “Indifference curves can never cross.” Explain your answer.

PART III: Producer Theory (4 V)

1. **(0,5 V)** (No deduction for a wrong answer!) Assume that the firm produces at the optimal point and that the price of labor decreases. In this case:
 - i) A firm will use more labor and the MRTS decreases.
 - ii) A firm will use more labor and the MRTS increases.
 - iii) A firm will use more capital and the MRTS decreases.
 - iv) A firm will use more capital and the MRTS increases.
2. a) **(0,5 V)** Assume that a production process of a firm is given by

$$Q = 10KL^2 - (KL)^3.$$

Knowing that in the short run $K=1$, find the number of labor units that maximizes the average product of labor.

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- b) **(1,0 V)** Does this number of labor units maximize production? Explain.

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3. A firm uses two factors of production with a production function given by

$$Q = 2 K L^2$$

where Q is the output, K is the capital and L is the labor. The prices of factors of production are given by: $w = 2$ m.u. ('monetary units'). and $r = 1$ m.u.

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- a) **(1,5 V)** Find the total cost function of this firm.

Nome:

Nº

Turma

- b) **(1,5 V) [Question for the FINAL EXAM evaluation]** Find a budget necessary to produce 100 units of output at the lowest possible cost.

PART IV: Market Structures (9 V)

1. a) **(1,0 V)** (No deduction for a wrong answer!) If the fixed cost of the firm increases:
 - i) The profit of the firm does not change.
 - ii) The quantity that maximizes profits does not change.
 - iii) The quantity that maximizes profits does change a lot.
 - iv) The firm has to shut--down.
2. Assume that the market for dry—cleaning is a perfect competition. The demand for cleaning is given by $Q=100-P$ and the supply is given by $Q=P$.
 - a) **(0,5 V)** Find the market equilibrium.
 - b) **(1,0 V)** Calculate the consumer surplus
 - c) **(1,5 V)** Assume that each of the firms operating in this market has a total cost function given by $TC=10q^2+1$. Find the supply curve of a typical firm.
 - d) **(0,5 V)** How much output will each firm in the market produce, given the market price?

Nome:

Nº

Turma

- a) **(1,0 V)** Find the profit of a typical firm. Given the profit you found, what will be the adjustments in this market?
- b) **(0,5 V)** Suppose now that instead of a competitive market we were facing a monopoly. Determine the market equilibrium in this new context, using the same demand curve and the same total cost curve that in the previous case.
- c) **(0,5 V)** If the monopolist could price discriminate, which kind of price discrimination would it be using? Justify your answer. Characterize this kind of price discrimination.
3. **(1,0 V) [Question for the FINAL EXAM evaluation]** True or false: "to maximize profits, a monopolist will produce at the point at which the difference between price and unit cost is the maximum."

4. Assume a market dominated by two oil companies (company PP and company BB). This week, a drop in the price of crude oil occurred. Now each of the companies can decide whether to decrease the price they charge or to retain the old price. Profits of the companies in each situation are given in the matrix below:

		Company BB	
		Retain	Decrease
Company PP	Retain	$\pi_{PP}=100$ million euro; $\pi_{BB}= 100$ million euro	$\pi_{PP}=40$ million euro; $\pi_{BB}= 150$ million euro
	Decrease	$\pi_{PP}=150$ million euro; $\pi_{BB}= 40$ million euro	$\pi_{PP}=80$ million euro; $\pi_{BB}= 80$ million euro

- a) **(1,0 V)** Find the Nash equilibrium of this game.

- b) **(1,0 V)** Comment on the following statement: “In this game there exists a Nash equilibrium which is at the same time the equilibrium in dominant strategies”.