



Lisbon School
of Economics
& Management
Universidade de Lisboa

Written Assessment Exam

“23 Year Olds and Older – 2022”

23rd of May, 2022

Duration: 2 hrs

Observations:

1. Before you start answering, please read all the questions carefully.
2. First structure an answer scheme for each question and only after having done so start writing your answer.
3. The test has four groups, each of which is worth 5 marks. Answer the groups in the order that you think best. The respective mark for each question in each group is clearly shown.
- 4. Answer each group on a separate exam sheet.**
5. The test lasts two hours. A 30 minute tolerance will be given.
6. When a question requires calculations, clearly show these calculations and also their workings.
7. Note that imperceptible handwriting will negatively affect the marking of your examination paper.

GROUP 1

1. Consider the following record of above-average rainfall for the last 200 rainy days in some of European capital cities.

	F (X=number of days)	f (x)	Cumulative
Helsinki	?	?	10
Kiev	20	?	?
Talinn	?	0.3	?
Bucharest	?	?	?
Warsaw	?	?	?
		1.00	

(Fictitious data)

Knowing that Warsaw has four times more rainy days than Bucharest, complete the whole table, replacing the question marks with the correct values, (1.50 marks)

2. a) What are the most relevant effects felt or likely to be felt by companies, in general, during periods of war, such as those that we are witnessing today in Europe? Explain. (1.75 marks)

b) what strategic and/or operational changes can Portuguese companies implement to better cope with this new situation? Explain. (1.75 marks)

GROUP 2

1. Consider a rectangle with perimeter of 10.

- (a) x being the measure of one of the sides of the rectangle, show that the area of the rectangle can be calculated by the following formula: (1.00 mark)

$$A(x) = 5x - x^2 \quad x \in]0,5[$$

- (b) using the formula from the previous question, indicate the value of x for which the area of the rectangle is the maximum. (1.00 mark)

2. Consider the real functions of the real variable f and g , defined by:

$$f(x) = \ln(1 + 3x) \quad \text{e} \quad g(x) = e^{x^2 - 8x} - 1 .$$

- (a) write the domain of the function $\frac{f}{g}$ as an interval/union of intervals. (1.00 mark)

- (b) calculate the values of $x \in \mathbb{R}$ which annul the derivative of the function g . (1.00 mark)

- (c) indicate the value of:

c.i) $\lim_{x \rightarrow 0} \frac{g(x)}{x}$ c.ii) $\lim_{x \rightarrow 0} f(x)$. (1.00 mark)

GROUP 3

1. Consider an economy with three consumers of a given good X. It is known that the quantities demanded for this good are as follows, for different prices of good X:

Price	Consumer 1	Consumer 2	Consumer 3
10	0	0	10
9	0	0	20
7	3	0	40
6	4	0	55
5	6	0	75
4	7	4	95
3	10	7	125

- a) plot the graph of the quantity demanded curve for good X, placing price on the vertical y axis, and quantity on the x horizontal axis. (1.25 marks)
- b) suppose that the income of Consumer 3 decreased by 50% and that the income of Consumer 2 increased by 50%. Plot the consequences of the changes in income of the two consumers on the graph of the previous question. Compare the result with the graph obtained in the previous question and explain briefly. (1.75 marks)
2. Suppose that the following prices and quantities represent the behaviour of a given agent in an economy with respect to a given good:

P:	10	12	14	16	18	20	22	(monetary unit)
Q:	100	100	100	100	100	100	120	(physical unit)

- a) is this demand or supply? Explain in no more than two lines. (0.50 marks)
- b) under what conditions is the market in equilibrium and at what prices? Explain in no more than five lines. (1.50 marks)

Adapted from Andrade (2006)

GROUP 4 – Version 1

1. Just as in the case of the First World War, two of the economic aspects associated with the Second World War were economic warfare and war economics. Explain what these concepts consist of. (2.00 marks)
2. The United States of America remained the dominant economy throughout the third quarter of the 20th century. Identify three factors of this dominance. (2.00 marks)
3. During the mid-1970s, the world economy experienced a new situation of overall crisis. One of the consequences of this crisis was 'stagflation'. Identify the economic consequences associated with the use of this expression. (1.00 mark)

GROUP 4 – Version 2

1. Two personality traits are alleged to exist as good predictors of a candidate's job performance. Explain what these traits are and how they relate to the concept of personality. Explain your choice. (3.00 marks)
2. In an international survey on happiness, 43% of respondents said that having a job or having a meaningful job is the greatest source of happiness (Ipsos, 2020).

Use two theories of motivation to explain this result. (2.00 marks)