Economics and Business Information Analysis

Instituto Superior de Economia e Gestão
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Normal examination period

1st year
Academic year 2008-2009

14 January 2009
Duration: 2h30m (150 minutes)

Always use 3 decimal places.

GROUP I

1. A study about the public servants retirement pensions in Country A in 2000 found the following results: mean value 1400 €; median value 1400 €; standard deviation 1000 €; Gini Index 0,2.

In 2007 we know the following information about the distribution of those pensions.

Pension value (euros)	Number of pensioners (thousands)
0 to 250	54,2
250 to 750	109,2
750 to 1500	125,8
1500 to 2500	79,1
2500 to 4000	30,6
4000 to 7000	3,7

Source: Country A Social Security

(1,0 val) **a)** Compute the retirement pensions mean and median value in country A, in 2007.

(1,0 val) **b)** Represent, using the appropriate graphic, the retirement pensions median value in country A in 2007 and comment the following sentence: "In 2007, in country A, over 40% of the retired receive retirement pensions below 750 €". Justify.

(1,0 val) **c)** Discuss, in case you have sufficient information, to what extent there was some change in distribution's skewness from 2000 to 2007.

(3,0 val) **d)** Analyse how the spread and concentration of retirement's pensions changed in Country A between 2000 and 2007.

2. Tell and justify whether, in general, the following sentences are true or false:

(0,50 val) **a)** The interquartile range is half of the total range.

(0,50 val) **b)** The mean is always between the first and the third quartile.

(0,50 val) **c)** The median is always between the first and the third quartile.

GROUP II

1. Consider the following information on the evolution of sales for a given company:

Table: Evolution of Company Sales

Year	2002	2003	2004	2005	2006	2007	2008
Sales value (Thousands euros)	799,2	845,2	885,2	905,8	942,0	972,9	1013,9

Source: Company reports

(1,0 val) **a)** Compute the absolute change and the rate of change of sales between 2002 and 2008.

(1,0 val) **b)** Compute the annual average rate of change between 2002 and 2008.

(1,5 val) **c)** Present the necessary operations and compute the 2006 fixed base index of sales using the chain index of sales.

(1,0 val) **d)** Which was the sales value in 2001 if, in 2002, sales have changed at the average rate verified between 2002 and 2008?

GROUP III

1. Assume you know the following information about the Portuguese GDP.

Table: GDP in Portugal

Year	2003	2004	2005	2006	2007
GDP (current prices, thousands of euros)	138581,8	144127,7	149123,5	155446,4	163119,1
Annual change of Prices (%)	3,2	2,4	2,5	2,8	3,0

Source: National Statistical Office

(1,5 val) **a)** Compute the values of GDP at 2005 constant prices.

(1,0 val) **b)** Compute the annual average rate of change between 2003 and 2007 of nominal and real GDP and explain the difference.

(1,0 val) **c)** In case you have enough information compute the 2003 GDP at 2002 prices.

(1,5 val) **d)** If the economy has grown in 2008 0,8% in real terms and prices have grown 2,9%, tell which is the GDP value in 2008 at current prices and at 2006 prices.

GROUP IV

1. Consider the following information on firewood consumption (in tonnes) and average monthly temperature (in Cº) in a village in the district of Braga.

Month	Out.	Nov.	Dez.	Jan.	Fev.	Mar.	Abr.	Mai.
Temperature (Cº)	9	5	2	1	3	6	8	11
Azinho (tones)	32	56	124	133	92	62	44	18

Assume you were asked to study the effect of temperature on firewood consumption.

(0,75 val) **a)** Assess the possible relationship using the graphical analysis.

(1,25 val) **b)** Assume that you know that the variance of temperature is 10,98, the variance of firewood consumed is 1.556,61 and that the covariance between the two variables is -126,08. Compute the equation of the regression line.

(1,00 val) **c)** Comment the following sentence: "In general, we can always use with confidence the estimated regression line to forecast the behaviour of the dependent variable".