Economics and Business Information Analysis

Instituto Superior de Economia e Gestão
UNIVERSIDADE TÉCNICA DE LISBOA

Normal examination period

1st year
Academic year 2011-2012

13 January 2012
Duration: 2h30m (150 minutes)

Always use 3 decimal places.

GROUP I

1. The following table reports the distribution of firms in a given industry by level of exports.

Table: Distribution of firms by level of exports

Level of exports (thousand €)	Number of firms
0	1759
]0,1000[	1540
[1000,5000[	846
[5000,100000[	358
mais de 100000	25
Total	4528

Source: Statistical office

(1,50 val) a) Present the histogram and the cumulative frequency line of this distribution.

(1,00 val) b) Compute the mean and median value of the distribution of exports per firm.

(1,00 val) c) Compute the standard deviation and the coefficient of variation of this distribution.

(0,50 val) d) Taking into account the measures computed analyse and explain the behaviour of the distribution in term of symmetry.

(1,50 val) e) Assess the degree of concentration of exports per firm using the Gini Index and comment the result.

(1,50 val) f) Say, and justify why, whether each of the following sentences is true or false:

　　　A. If a dataset includes exclusively integers then the mean is an integer.

　　　B. The mode is the numerical value that occurs with higher frequency.

GROUP II

1. Assume that you know the following information about the behaviour of sales of a given company.

Table: Sales – annual growth rates

2008	2009	2010	2011
7.0	4.2	0.3	2.1

Source: Firm reports

(1,00 val)   a) Compute the average annual rate of change of sales between 2007 and 2011.

(0,50 val)   b) Compute the sales rate of change between 2008 and 2011.

(1,00 val)   c) If sales have grown at the annual average rate of 3% per year between 2000 and 2007, compute the rate of change and the average annual rate of change between 2000 and 2011.

(1,00 val)   d) Compute, for the years that is possible, the chain and 2007 fixed base index of sales.

(1,00 val)   e) Knowing that the sales manager of this company set, in 2007, as a goal, that sales in 2015 should be 60% higher than its value in 2007, comment how likely is that that target will be achieved given the behaviour of sales till 2011?

GROUP III

1. Consider the following table information about sales of a given company between 2007 and 2010. You know additionally that sales in 2007 were 40.670.

Table: Information on sales

Year	2007	2008	2009	2010
Evolution of sales at current prices (2006=100)	105,1	106,7	110,3	113,3
Price index (chain)	103,4	104,9	103,9	104,1

Source: Firm Reports

(2,00 val)   a) Compute, for each year, the 2008 fixed base index of sales change at constant prices.

(1,00 val)   b) Which is the value of sales in 2010 at 2008 constant prices?

(1,00 val)   c) Which is the value of sales in 2009 at 2006 constant prices?

(1,50 val)   d) If in 2011 sales have increased 1% in real terms and prices have increased 1,4%, compute the value of sales in 2011 at current and at 2008 constant prices.

GROUP IV

1. The human resources manager in a given company is studying the effect of an incentive system that was introduced to diminish absenteeism. The relationship between the level of incentives and the absenteeism of each worker is given by:

$$absenteeism = 7 - 0,08 * incentives.$$

(0,50 val)   a) If you know that a worker has received incentives of 350€ which is the expected level of absenteeism?

(1,25 val)   b) Knowing that the linear correlation coefficient between incentives and absenteeism is -0,6, how confident can the manager be on the value computed in a)?

(1,25 val)   c) Knowing that the variance of the level of incentives is 62500, compute the covariance between absenteeism and incentives and say to what extent the covariance is different from the linear correlation coefficient reported in b).