Economics and Business Information

Second examination period
03 February 2017
Duration: 2h30m (150 minutes)

LISBON SCHOOL OF ECONOMICS & MANAGEMENT
UNIVERSIDADE DE LISBOA
1st year
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Always use 3 decimal places.

GROUP I

1. To analyse the daily production of a given company the following information was collected:

Table: Distribution daily production

Production volume	% days
<100	15
100-1.000	36
1.000 - 2.500	33
>2.500	16

Source: Production departament

(1,25 val) a) Depict graphically the simple and cumulative frequencies of the distribution.

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

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

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

(1,25 val) e) Analyse the degree of concentration of this distribution.

2. One retail trade company with several establishments is assessing the impact of different strategic alternatives. Comment the following statements.

(1,00 val) a) If sales of all shops increase the same proportion, the mean of sales per shop increases in that proportion, spread stays the same and concentration decreases.

(1,00 val) b) The company is considering to focus on larger shops by closing or selling the smaller shops. In that case it is expected that the average sales per shop increase and that the concentration also increases.

GROUP II

1. Consider the following information on the evolution of turnover of a given firm.

Table: Information on turnover

Year	2012	2013	2014	2015	2016
Yearly change (%)	-0.5	-0.6	?	2.1	1.8

Source: Management reports

One knows also that the growth rate between 2013 and 2015 was 3.2%.

(1,50 val)   a) Compute for the years from 2011 to 2016 the chain index.

(1,00 val)   b) Compute the average annual growth rate between 2011 and 2013.

(1,00 val)   c) Compute the cumulative growth between 2014 and 2016.

2. Comment the following statement:

(1,00 val)   a) "Between 2000 and 2010 the company's sales grew at an average rate of around 2%. From 2010 to 2016 they did not grow more than 0.5% per year. The company will thus have accumulated growth of more than 26% and an average growth of around 1.5%."

GROUP III

1. You know the following information about the evolution of a company's turnover.

Table: Information on the evolution of a company's turnover

	2013	2014	2015	2016
Annual change at current prices (%)	1,2	2,6	1,8	2,2
Chain price index	101,50	100,80	101,2	101,8

Source: Statistics Office

You also know that the value of turnover in 2015 at current prices was 3,980.

(1,00 val)   a) Determine the real growth of this variable between 2014 and 2016.

(1,50 val)   b) Determine the value of this variable in 2014 at current prices and previous year prices.

(1,50 val)   c) Compute the forecast of the value of this variable at current prices and at previous year prices in 2017, assuming that a change in prices of 1.5% and of quantities of 1.7% is expected in that year.

2. Considering the construction of aggregate indexes, comment on the following statement.

(1,50 val)   a) For the decomposition of a variation in value between variation in volume and price variation it is indifferent to use Paasche or Laspeyres indices.

GROUP IV

1. It is intended to analyse to what extent the stock price of a company is explained by the market index. For this purpose, information on the company and the market is available for 7 years. By assigning x and y to the values of the stock price and the market index and making the necessary calculations were obtained the following results:

Mean of x = 5,44   Mean of y = 4,36

Variance of x = 4,36   Variance of y = 1,278

Covariance between x and y = 2,38

(0,75 val)   a) Based on the above values, quantify and qualify the correlation between x and y.

(1,00 val)   b) Estimate the regression line between the two variables and relate it to the value of the calculated correlation coefficient.

(1,25 val)   c) Explain the difference between the information provided by the value of the correlation coefficient and the value of covariance. What is the relevance of the information given by the correlation coefficient and in what does it add to the information given by covariance?