Economics and Business Information

Normal examination period
17 January 2017
Duration: 2h30m (150 minutes)

LISBON
SCHOOL OF
ECONOMICS &
MANAGEMENT
UNIVERSIDADE DE LISBOA
1st year
Academic year 2016-2017

Always use 3 decimal places.

GROUP I

1. You know the following information about the distribution of clients of a given firm by level of sales.

Table: Distribution of clients by sales level

Sales level (€)	% clients
0-50.000	18
50.000-100.000	28
100.000-500.000	31
500.000-1.000.000	15
>=1.000.000	8

Source: Commercial department

(1,50 val) a) Depict graphically the simple and cumulative frequencies of this 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 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) Analyse the behaviour of this distribution using the box and whiskers plot.

(1,50 val) f) Analyse the level of concentration of this distribution and discuss the level of dependence of this company with respect to its biggest clients.

GROUP II

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

Table: Evolution of sales

Year	2012	2013	2014	2015	2016
Yearly rate of change (%)	2.1	-0.8	1.4	?	1.7

Source: Commercial department

One also knows that the annual average growth rate between 2013 and 2015 was 1.7%.

(1,50 val) a) Compute for the years from 2012 to 2016 the chain index of sales.

(1,00 val) b) Compute the average annual growth rate between 2012 and 2015.

(1,00 val) c) Compute the cumulative growth between 2012 and 2014.

(1,00 val) d) Knowing that the value of sales in 2014 was 2.200 thousand euros, compute its value in 2011.

GROUP III

1. One knows the following information about the evolution of sales of other company.

Table: Information on the evolution of an economic variable

	2013	2014	2015	2016
Yearly change at constant prices (%)	1.4	1.1	0.2	2.5
Price index (fixed base 2011)	102.00	103.2	103.3	103.9

Source: Commercial department

One also knows that the value of this variable in 2013 at current prices was 5.400 monetary units.

(1,00 val) a) Compute the 2012 fixed base index of this variable at constant prices and tell which was the growth rate between 2012 and 2015.

(1,50 val) b) Compute the nominal growth of this variable between 2013 and 2015.

(1,50 val) c) Compute the value of this variable in 2016 at current prices and at previous year constant prices.

(1,50 val) d) Compute your forecast for the value of this variable in 2017 at current prices and at 2015 prices if you expect that prices increase 1.4% and quantities 2.1% in that year.

GROUP IV

1. In analysing the sales evolution of the company, the studies department intends to analyse the relationship between it and the evolution of the country's economy (measured by the evolution of the country's GDP). You have the information below.

Table: Information on company sales and Country's GDP

Sales (10^3 euros)	97881	91449	109068	110596	105351	119210	126557
GDP (10^9 euros)	175448.2	179929.8	176166.6	168398.0	170269.3	173079.1	179539.9

Source: Commercial departament

(2,00 val) a) Compute the regression line equation that better represents the relationship between these two variables and comment it.

(1,00 val) b) Verify if the relationship between the two variables is strong.