Level 2 Certificate in Business Statistics

Syllabus

Effective from 1st October 2001

INTRODUCTION

EDI is a leading international awarding body that was formed through the merger of the London Chamber of Commerce and Industry Examinations Board (LCCI) and GOAL, a leading online assessment provider. EDI now delivers LCCI International qualifications (LCCI IQ) through a network of over 5000 registered centres in more than 120 countries worldwide. Our range of business-related qualifications is trusted and valued by employers worldwide and recognised by universities and professional bodies.

Level 2 Certificate in Business Statistics

Aims

The aims of this syllabus are to enable candidates to develop:

- a knowledge and understanding of some basic statistical techniques

- the ability to apply this knowledge and understanding in solving business problems

Target Audience and Candidate Progression

This qualification is intended for candidates who:

- have an up-to-date knowledge of basic arithmetical processes

- can recognise and use the appropriate formulae provided with the examination paper

- wish to obtain a certificate for the LCCI IQ Business Statistics Level 2 examination

- wish to proceed to the Business Statistics Level 3 course

Level of English

Candidates should have a standard of English equivalent to LCCI IQ English for Business Level 1.

Structure of the Qualification

The level 2 Certificate in Business Statistics is a single unit qualification that consists of the range of topics detailed below.

Syllabus Topics

1   Quantitative information

2   Descriptive Statistics

3   Forecasting

4   Uncertainty

Guided Learning Hours

EDI recommends that 140-160 Guided Learning Hours (GLHs) provide a suitable course duration for an 'average' candidate at this level. This figure includes direct contact hours as well as other time when candidates' work is being supervised by teachers. Ultimately, however, it is the responsibility of training centres to determine the appropriate course duration based on their candidates' ability and level of existing knowledge. EDI experience indicates that the number of GLHs can vary significantly from one training centre to another.

ASSESSMENT

Assessment Objectives

The examination will assess the candidate's ability to:

- demonstrate a knowledge and understanding of some basic statistical techniques including the collection and presentation of data

- apply the above knowledge and understanding in solving business problems

Coverage of Syllabus Topics in Examinations

Four questions are set from Syllabus Topics 2 and 3. The remaining 2 questions are set from Syllabus Topics 1 and 4. Questions may be drawn from 2 or more syllabus topics.

Mark Allocation

Marks will be awarded for the appropriateness of the method used as well as for the accuracy of the answer.

Marks will not normally be reserved for appropriate use of English, correct use of grammar, for a specific format of answer, or for presentation, except where specifically stated in the question (such as asking for the answer in a particular format). Candidates should, however, be aware of the need for clear, intelligible and unambiguous answers. An answer must be comprehensible in order to gain marks.

Examination Format

- The time allowance for the examination is 2 hours 30 minutes

- Candidates will be required to answer 4 questions from a choice of 6

- All questions carry equal marks

All questions carry equal marks

Answer Format

Marks are awarded for correct working as well as for correct answers and for an appropriate level of accuracy.

Where a correct answer is provided, without working, a candidate will normally be given full marks for that section. However, where a question asks for a specific method, then that method must be used and shown, otherwise the candidate will normally receive no marks for that section. Candidates are advised that it is normally to their advantage to show all working.

Certification

Successful candidates will be awarded the level 2 Certificate in Business Statistics based on the achievement of the percentages and grades below.

Pass   50%
Merit   60%
Distinction   75%

Recommended Reading List and Support Material

Reading List

Title	Author	Publisher	ISBN Code
How to Pass Business Statistics Second and Third Levels	D Friend	LCCIEB	1 86247 005 7

Support Material

Model answers and past question papers are available from the LCCI website www.lcci.org.uk. A Solutions Booklet to support the Passport to Success book is also available from the website.

Formulae

A list of formulae for use at Level 2 Business Statistics is printed at the rear of this syllabus. This formulae list is available to candidates at the examinations. The list contains the principal formulae appropriate to this level but is not intended to be exhaustive. Centres and candidates should pay careful attention and note those syllabus items where the relevant formulae are not given in the list.

How To Offer This Qualification

To offer this qualification you must be an LCCI IQ registered examination centre. To gain centre approval please contact Customer Support on 08700 818008 between the hours of 0830 and 1700 (GMT) Monday to Friday or by email on centresupport@ediplc.com.
Alternatively you may contact your Regional LCCI Office or Co-ordinating Authority.

Syllabus Topic	Items Covered
1 Quantitative Information	Candidates must be able to:
1.1 Graphical presentation	1.1.1 Differentiate alternative forms of data e.g. discrete and continuous
	1.1.2 Know the circumstances in which the various graphs/diagrams/charts should be used
	1.1.3 Construct the various types of bar charts, pie charts, pictograms, Z charts, Lorenz curve and graphs
	1.1.4 Draw neat and tidy graphs/diagrams/charts
	1.1.5 Label axes, give titles of diagrams; when given, state source of data
	1.1.6 Use shading, where appropriate
	1.1.7 Comment on graphs/diagrams/charts
1.2 Survey methodology	1.2.1 Understand the difference between primary and secondary data
	1.2.2 Know the difference between a census and a survey and their relative advantages and disadvantages
	1.2.2 Understand the nature of a sampling frame
	1.2.3 Understand the term sampling fraction
	1.2.4 Know the various methods of sampling and their advantages and disadvantages
	1.2.5 Know the advantages and disadvantages of the interview and the postal questionnaire as methods of collecting data
	1.2.6 Understand the problem of interviewer bias
	1.2.7 Understand the principles of questionnaire design

1.2.9   Design a questionnaire

1.2.10 Recognise the problem of non response
        and know the methods of attempting to
        overcome the problem

1.2.11 Understand the need for a pilot survey
        before conducting a large scale survey

2   Descriptive Statistics   Candidates must be able to:

2.1   Measures of location   2.1.1   Construct a cumulative frequency table
and dispersion -
grouped data   2.1.2   Draw a cumulative frequency curve
                                         (ogive)

                                 2.1.3   Draw a histogram, and be able to deal
                                         with unequal class intervals

                                 2.1.4   Calculate mean, median and quartiles
                                         (the relevant formula are given in the
                                         formulae list)

                                 2.1.5   Obtain the median and quartiles from the
                                         cumulative frequency curve

                                 2.1.6   Obtain the mode from either a histogram
                                         or from a formula (the relevant formula is
                                         not given in the formulae list)

                                 2.1.7   Calculate standard and quartile
                                         deviations (the relevant formulae are
                                         given in the formulae list)

                                 2.1.8   Understand what measures of location
                                         and dispersion represent

2.2   Measures of location   2.2.1   Calculate the mean, median,
and dispersion -   mode, quartiles and geometric mean
ungrouped data   (the formulae are **not** given in the
                                         formulae list)

                                 2.2.2   Calculate the standard deviation (the
                                         relevant formula is **not** given in the
                                         formulae list)
                                 2.2.3   Calculate the quartile deviation (the
                                         formula is given in the formulae list)

                                 2.2.4   Calculate the mean deviation (the
                                         formula is **not** given in the formulae list)

2.3	**Coefficient of variation**	2.3.1	Calculate a coefficient of variation (the relevant formula is given in the formulae list)
		2.3.2	Understand the use of the coefficient of variation
2.4	**Index numbers**	2.4.1	Calculate Laspeyres and Paasche index numbers (both price and quantity formulae for these index numbers are given in the formulae list)
		2.4.2	Understand the advantages and disadvantages of Laspeyres and Paasche index numbers
		2.4.3	Calculate a weighted index number (the relevant formula is given in the formulae list)
		2.4.4	'Splice' index numbers (the relevant formula is *not* given in formulae list)
		2.4.5	Use an index of retail prices for 'index linking' eg of pensions
		2.4.6	Understand the construction and use of at least one major index eg the index of retail prices or the index of industrial production

3	**Forecasting**	Candidates must be able to:
3.1	**Correlative and regression**	3.1.1	Draw a scatter diagram, know how to place the dependent variable on the vertical axis and the explanatory variable on the horizontal axis
		3.1.2	Comment on the data from a scatter diagram – whether the data lies on a line or a curve and the presence of outliers
		3.1.3	Calculate a least squares regression line (the relevant formulae are given in the formulae list)
		3.1.4	Plot regression line on scatter diagram
		3.1.5	Use regression line for forecasting purposes and be able to comment on the likely accuracy of forecasts
		3.1.6	Calculate the product moment correlation coefficient (the relevant formula is given in the formulae list

3.1.7　Rank a set of data and be able to deal with ties

3.1.8　Calculate Spearman's rank correlation coefficient (the relevant formula is given in the formulae list)

3.1.9　Obtain the coefficient of determination (the relevant formula is **not** given in the formulae list) and understand what this coefficient measures

3.2　Time Series

Candidates must be able to:

3.2.1　Plot a time series – time along the horizontal axis

3.2.2　Use a moving average to calculate the trend and to know when the trend needs to be centred

3.2.3　Plot trend on time series graph

3.2.4　Calculate the seasonal factors for either the additive or multiplicative model.

3.2.5　Calculate seasonally adjusted values

3.2.6　Understand why seasonally adjusted values are found

3.2.7　Find likely future values of the trend – either graphically or by a simple method (fitting a least squares regression line is not expected, as this is too time consuming)

3.2.8　Use the future trend to forecast future values

3.2.9　Discuss the likely accuracy of any forecast

4   **Uncertainty**

4.1   **Probability**

Candidates must be able to:

4.1.1   Understand the classical and the empirical definitions of probability

4.1.2   Understand the concept of 'mutually exclusive events'

4.1.3   Understand the addition and multiplication rules of probability

4.1.4   Draw a Venn diagram

4.1.5   Draw a tree diagram

4.1.6   Use Venn and tree diagrams to solve probability problems

FORMULAE

Median $\qquad I_m + \dfrac{c_m}{f_m}\left(\dfrac{n}{2} - F_{m-1}\right)$

Where I_m, c_m and f_m are the lower boundary, width and frequency respectively of the median class, n is the total number of observations and F_{m-1} is the cumulative frequency corresponding to I_m.

Mean $\qquad \bar{x} = \dfrac{\sum fx}{\sum f}$

Standard deviation $\qquad S = \sqrt{\dfrac{\sum fx^2}{\sum f} - \left(\dfrac{\sum fx}{\sum f}\right)^2}$

Quartile deviation $\qquad \dfrac{Q_3 - Q_1}{2}$

Mean deviation $\qquad \dfrac{\sum f\,|x - \text{mean}|}{\sum f}$

Coefficient of variation $\qquad \dfrac{s}{\bar{x}} \times 100$

Product moment correlation coefficient $\qquad r = \dfrac{n\sum xy - (\sum x)(\sum y)}{\sqrt{\left(n\sum x^2 - (\sum x)^2\right)\left(n\sum y^2 - (\sum y)^2\right)}}$

Spearman's rank correlation coefficient $\qquad r_s = 1 - \dfrac{6\sum d^2}{n(n^2 - 1)}$

Least squares regression line $\hat{y} = a + bx \qquad b = \dfrac{n\sum xy - (\sum x)(\sum y)}{n\sum x^2 - (\sum x)^2} \qquad a = \dfrac{\sum y}{n} - \dfrac{b\sum x}{n}$

	Price	Quantity
Laspeyres index	$\dfrac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$	$\dfrac{\sum p_0 q_1}{\sum p_0 q_0} \times 100$
Paasche index	$\dfrac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$	$\dfrac{\sum p_1 q_1}{\sum p_1 q_0} \times 100$

Weighted index number $\qquad \dfrac{\sum WI}{\sum W}$

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