

IAB LCCI Level 3 Certificate in Business Statistics

Group 1 – select 20 questions (4 marks each)

Group 2 – select 10 questions (2 marks each)

TOTAL MARKS = 100 marks

Group 1 – select 20 questions (4 marks each)

Question 2: MCQ

What are the three main components of a time series?

- A) Trend, seasonality, and cyclical fluctuations
- B) Trend, seasonal factors, and weighted index numbers
- C) Additive model, multiplicative model, and weighted average
- D) Product moment correlation coefficient, Spearman's rank correlation coefficient, and regression equation

Answer: A

Question 3: MCQ

A company tracks the sales of two products over three months. The sales data (in units) and prices (in £) for each product are as follows:

Month	Product A (Units Sold)	Price A (£)	Product B (Units Sold)	Price B (£)
1	200	10	150	20
2	250	12	100	22
3	300	11	200	21

What is the weighted index number for price of Product A for the three months, using Month 1 as the base month?

- A) 100
- B) 105
- C) 110
- D) 95

Answer: C

Question 5: Fill in Blanks –

When interpreting a scatter diagram, it is essential to look out for _____, which can affect the relationship between variables.

- A) Similarities
- B) Median values
- C) Outliers
- D) Mode values

Answer: C) Outliers

Question 8: MCQ

Company has recorded the following sales data over a period of 3 months:

- Month 1: 400 units
- Month 2: 420 units
- Month 3: 440 units

What is the trend in sales?

- A) Decreasing trend
- B) No trend
- C) Increasing trend
- D) Fluctuating trend

Answer: C) Increasing trend

Question 9: MCQ

What is the advantage of using a multiplicative model over an additive model?

- A) It is easier to calculate
- B) It is more accurate for seasonal data
- C) It can be used for both trend and seasonality analysis
- D) It is only suitable for weighted index numbers

Answer: B

Question 11: MCQ

What is the main purpose of a time series graph?

- A) To identify outliers in data
- B) To forecast future values
- C) To show the trend and seasonality of a time series
- D) To calculate the product moment correlation coefficient

Answer: C

Question 14: MCQ

What is the primary advantage of setting up quality control charts?

- a) Improved product quality
- b) Increased production speed
- c) Reduced costs
- d) Enhanced customer satisfaction

Answer: a

Question 15: MCQ

Which type of chart is used to monitor the mean of a process?

- a) Control chart for range
- b) Control chart for mean
- c) Histogram
- d) Scatter plot

Answer: B

Question 16: MCQ

What are the two types of control limits used in quality control charts?

- a) Upper and lower limits
- b) Warning and action lines

- c) Mean and range limits
- d) Standard deviation limits

Answer: b

Question 17: Insert Values

A quality control chart shows a mean value of 50 with an upper warning line at 51.5 and an upper action line at 52.2. What is the percentage increase from the mean to the upper action line? (Insert your answer to two decimal places)

Answer: 4.40%

Question 18: Match Items

Match the following terms with their definitions:

Normal distribution	A diagram showing the shape of a distribution
Mean chart	A type of control chart for monitoring means.
Warning line	The intermediate level between upper and lower limits.
Action line	The level at which action should be taken to correct a process.

Question 20: Fill in Blanks –

A normal distribution has _____ percentage of data points within 1 standard deviation of the mean. (Give the answer to the nearest whole number.)

- A) 72%
- B) 32%
- C) 28%
- D) 68%

Answer: D) 68%

Question 21: Match Items

Match correct terms to their definitions:

Control chart	A statistical process control method.
Mean	The average value of a set of data.
Variance	The squared difference from the mean.
Standard deviation	The square root of variance.

Question 25: Fill in Blanks –

In a quality control chart, the _____ line indicates the point at which action should be taken to correct a process.

- A) action
- B) critical
- C) critical path
- D) average

Answer: A) action

Question 26: Insert Value

According to normal distribution theory, approximately what percentage of data points fall within 2 standard deviations of the mean.

Answer: 95

Question 29: MCQ

Which of the following statements is TRUE about mutually exclusive events?

- a) They can never happen at the same time
- b) They always happen at the same time
- c) The probability of one event does not affect the other
- d) The probability of one event affects the other

Answer: A

Question :31 (MCQ)

Which of the following are examples of presentation methods for business outcomes?

- a) Tabulation and Venn diagrams
- b) Tree diagrams and histograms
- c) Bar charts and scatter plots
- d) All of the above

Answer: d

Question :31 MCQ

What are the two main types of errors that can occur when using statistical tests?

- a) Type I and Type II errors
- b) Sampling and Measurement errors
- c) Random and Systematic errors
- d) None of the above

Answer: a

Question 32:Insert Values

A company has a mean sales value of £10,000 per month with a standard deviation of £2,500. What is the probability that the actual sales value will be less than £8,000?

Answer: 21.19%.

Question 33:Match Items

Match the following statistical tests to their appropriate descriptions:

Single mean test for large samples using the normal distribution	Test for the equality of two means
Single proportion test	Test to compare the proportion of successes in two populations
Two means test for small samples using the t distribution	Test for the difference between one mean and another mean
Paired comparison test using the t distribution	Test to compare the proportion of successes in one population

Question :37 Match Items

Match the following terms to their correct definitions:

Statistical test	a procedure for drawing conclusions about a population based on a sample of data
Confidence interval	an interval estimate that provides a range within which the true value is likely to lie
Type I error	rejecting a true null hypothesis (false positive)
Mutually exclusive events	events that cannot occur at the same time

Question :41 MCQ

What is the primary purpose of planning for data collection?

- A) To ensure that the data is accurate
- B) To identify the most suitable method of data collection
- C) To decide which type of data to collect
- D) To determine the sample size

Answer: B

Question :42 MCQ

Which of the following is a characteristic of primary sources of business data?

- A) They are usually secondary sources
- B) They are often unreliable
- C) They are original and first-hand
- D) They are only used for small businesses

Answer: C

Question :43 MCQ

What is the main advantage of using a census over a survey?

- A) It is less expensive

- B) It provides more accurate results
- C) It is faster to complete
- D) It is more comprehensive in its coverage

Answer: D

Question :44 MCQ

Which sampling method involves selecting every nth unit from the population?

- A) Random sampling
- B) Systematic sampling
- C) Quota sampling
- D) Stratified sampling

Answer: B

Question :45 MCQ

What is the purpose of stratification in sample design?

- A) To ensure that the sample is representative of the entire population
- B) To reduce the risk of bias in the sample
- C) To increase the size of the sample
- D) To make the sample more diverse

Answer: B

Question :46 MCQ

Which of the following are advantages of using email surveys for data collection?

- A) Faster response times, lower costs, increased reach
- B) Increased accuracy, faster response times, higher participation rates
- C) Lower costs, increased reach, better representation of target audience
- D) Higher participation rates, faster response times, better representation of target audience

Answer: A

Question :47 MCQ

Which of the following are disadvantages of using postal questionnaires for data collection?

- A) High costs, low response rates, time-consuming processing
- B) Low response rates, high costs, inaccurate data
- C) Inaccurate data, high costs, time-consuming processing
- D) Time-consuming processing, low response rates, inaccurate data

Answer: A

Question :47 Insert Values

Calculate the mean of the following data:

12, 15, 18, 20, 22, 25, 30, 35, 40, 45

Answer: 26.2

Question :48 Insert Values

Calculate the standard deviation of the following sample data:

10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30

Answer: 6.63

Group 2 – select 12 questions (2 marks each)

Question 1: MCQ

What is the main purpose of a scatter diagram?

- A) To show the relationship between two variables
- B) To identify outliers in data

- C) To calculate the product moment correlation coefficient
- D) To plot a least squares regression line

Answer: A

Question 4: Multiple Choice

What is Spearman's rank correlation coefficient used for?

- A) To test for significance of a correlation coefficient
- B) To calculate the product moment correlation coefficient
- C) To identify outliers in data
- D) To forecast future values

Answer: A

Question 6: True/False

The product moment correlation coefficient is used to test for significance of a correlation coefficient.

Answer: FALSE

Question 7: MCQ

What is the main purpose of plotting a least squares regression line?

- A) To identify outliers in data
- B) To forecast future values
- C) To show the relationship between two variables
- D) To calculate the product moment correlation coefficient

Answer: C

Question 10: Fill in Blanks -

The product moment correlation coefficient measures the strength and _____ relationship between two variables.

Answer: direction

accurate

close

relevant

Question 12: True/False

The coefficient of determination measures the strength of a linear relationship between two variables.

Answer: TRUE

Question 13: MCQ

What is the main purpose of forecasting future values?

- A) To identify outliers in data
- B) To calculate the product moment correlation coefficient
- C) To test for significance of a correlation coefficient
- D) To make informed business decisions

Answer: D

Question 19: Fill in Blanks –

According to quality control charts, if a process mean exceeds the _____ line, suitable steps should be taken to correct it.

- A) action
- B) critical
- C) critical path
- D) average

Answer: A) action

Question 21: Fill in Blanks –

In quality control, the purpose of setting up control charts is to ensure that consistency and _____ is maintained throughout a process.

- A) uniformity
- B) stability
- C) cost
- D) quality

Answer: B) stability

Question 22: True/False

True or False: Control charts can only be used for monitoring processes with constant variability.

Answer: False

Question 23: True/False

True or False: A normal distribution is symmetric around its mean.

Answer: True

Question 24: True/False

True or False: Quality control charts are only used in manufacturing industries.

Answer: False

Question 27: Fill in Blanks –

The purpose of using diagrams, charts, and graphs in business statistics is to _____ complex data into easily interpretable forms.

- A) maximise

- B) optimise
- C) convert
- D) condense

Answer: D) condense

Question 28: MCQ

What is the purpose of using probability in a business environment?

- a) To predict future events with certainty
- b) To understand uncertainty and make informed decisions
- c) To eliminate risk completely
- d) To ignore potential outcomes

Answer: B

Question 30: MCQ

What is the name given to the distribution that is commonly used when analysing business outcomes?

- a) Normal Distribution
- b) Binomial Distribution
- c) Poisson Distribution
- d) Uniform Distribution

Answer: A

Question :34 True/False

True or False: A confidence interval can be used to test a hypothesis about a population mean.

Answer: TRUE

Question :35 True/False

True or False: The chi-squared test is used to test for independence between variables.

Answer: TRUE

Question :36 True/False

True or False: The t-test is used to compare the means of two independent samples.

Answer: FALSE (it's used to compare paired data)

Question :38 True/False

A statistical test can be used to determine whether there are significant differences between two means.

Answer: TRUE

Question :39 True/False

The normal distribution is a continuous distribution that is often used in business statistics.

Answer: TRUE

Question :40 True/False

A confidence interval provides a range within which the true value is certain to lie.

Answer: FALSE

Question :49 True/False

True or False: A survey is a method of data collection that involves collecting data from the entire population.

Answer: FALSE

Question :50 True/False

True or False: The mean and standard deviation are measures of location in descriptive statistics.

Answer: FALSE

True or False: A pie chart is used to display categorical data.

Answer: TRUE