IAB LCCI Level 2 Certificate in Business Statistics

Overview of content

Management Information The External and Internal Business Environment

Data collection

Data presentation

Descriptive statistics

Forecasting for Business Decisions

Correlation and regression

Time-based data

Risk Management and Business Decision Making

Probability

GROUP 1 – SELECT EIGHT (x4 marks each)

Question 1 - MCQ

What is the classical definition of probability?

A) The number of times an event occurs out of a total number of trials

B) The ratio of favourable outcomes to the total possible outcomes

C) A measure of how likely an event is to happen

D) The average frequency of an event over a period of time

Answer B) The ratio of favourable outcomes to the total possible outcomes

Question 2 - MRQ

Which of the following events are mutually exclusive?

A) Winning a red marble or winning a blue marble from a bag

B) Rolling a 1, 2, or 3 on a dice

C) The sun rising in the east or the sun setting in the west

D) All of the above

Answer D) All of the above

Question 3 – INSERT VALUE

A bag contains 5 red marbles, 3 blue marbles, and 2 green marbles. What is the probability of drawing a non-red marble at random?

Insert your answer, as a decimal, in the space provided _____

Answer (5/10) = 0.5

Question 4 - MATCH ITEMS

Match the following definitions to the correct terms

A) A set of possible outcomes	1. Sample Space
B) The likelihood of an event occurring	2. Probability
C) A diagram showing all possible outcomes and their probabilities	3. Venn Diagram

Question 5 - INSERT VALUE

Using the addition rule of probability, if the probability of event A is 0.4 and the probability of event B is 0.6, what is the probability that either event A or event B occurs?

Insert your answer in the space provided _____

Answer 0.4 + 0.6 - 0 = 1

Question 6 - MRQ

Which of the following statements are true?

A. The probability of an event is always between 0 and 1

B. Two events can be mutually exclusive but not independent

C. The multiplication rule of probability only applies to dependent events

Answer A, B

Question 7 -MRQ

Which of the following events are not mutually exclusive?

A. Drawing a heart or a diamond from a deck of cards

B. Rolling a total of 6 on two separate dice

C. Buying a red or blue shirt

D. Winning twice in the national lottery

Answers B, D

Question 8 - MCQ

Which of the following events are mutually exclusive?

A) Winning a red marble or winning a blue marble from a bag

B) Rolling a 1, 2, or 3 on a dice

C) The sun rising in the east or the sun setting in the west

D) All of the above

Answer D) All of the above

Question 9 - INSERT VALUE

A coin is flipped 10 times, and it lands heads up 7 times. What is the estimated probability of getting heads in one flip?

Insert your answer here as a decimal: _____

Answer 0.7

Question 10 - INSERT VALUE

A company has two machines producing widgets. Machine A produces 80% of the total output, and machine B produces 20%. If one widget is selected at random, what is the probability it was produced by machine A?

Answer 0.8

Question 11 - INSERT VALUE

Using the addition rule of probability, if the probability of event A is 0.4 and the probability of event B is 0.6, what is the probability that either event A or event B occurs?

Insert your answer in the space provided _____

Answer 1.0

Question 12 - TRUE/FALSE

The probability of an event occurring is always greater than or equal to 0.5.

True or False

Answer False (probability can be any value between 0 and 1)

Question 13 - MCQ

What is the result of applying the multiplication rule of probability to two independent events?

A) The product of the probabilities

B) The sum of the probabilities

C) The difference between the probabilities

D) The ratio of the probabilities

Answer A) The product of the probabilities

GROUP 2 – SELECT EIGHT (x4 marks each)

Question 14 -MRQ

What are the different methods of sampling?

Select all correct responses

A) Random

B) Systematic

C) Quota

D) Stratified

E) Convenience

Answer A, B, C, D

Question 15 -MCQ

What is the difference between a census and a survey?

A) A census is conducted on a larger scale than a survey.

B) A census is conducted only once, while a survey can be repeated.

C) A census collects data from the entire population, while a survey selects a sample from the population.

D) A census is more expensive than a survey.

Answer C) A census collects data from the entire population, while a survey selects a sample from the population.

Question 16 – MISSING WORD

A company has collected data on its customers' age and income. What is formula for the coefficient of variation?

Coefficient of variation = _____ / _____

Answer (Standard deviation / Mean)

Question 17 -INSERT VALUE

What is the median of the following data 10, 15, 20, 25, 30?

Insert your answer in the space provided _____

Answer 20

Question 18 -MCQ

What is the advantage of using stratification in sample design?

A) It ensures that every stratum is equally represented in the sample.

B) It helps to reduce sampling error.

C) It increases the cost of conducting a survey.

D) It reduces the sample size.

Answer B) It helps to reduce sampling error.

Question 19 - INSERT VALUE

What is the median of the following data: 5, 7, 9, 12, 18?

Insert your answer _____

Answer 9

Question 20 -MCQ

What is the advantage of using a cumulative frequency curve?

A) It shows the distribution of data.

B) It helps to identify outliers.

C) It reduces the sample size.

D) It increases the cost of conducting a survey.

Answer A) It shows the distribution of data.

Question 21 -MCQ

What is the term used to describe a type of sampling method where every nth unit in a population is selected?

A) Random sampling

B) Systematic sampling

C) Quota sampling

D) Stratified sampling

Answer B) Systematic sampling

Question 22 -MCQ

What is the purpose of a pilot survey in data collection?

A) To test the validity of the data

B) To gather initial feedback from respondents

C) To establish a baseline for future surveys

D) To identify potential biases in the sample

Answer: B) To gather initial feedback from respondents

Question 23 -MCQ

Which type of graph is suitable for displaying categorical data?

A) Histogram

B) Bar chart

C) Pie chart

D) Lorenz curve

Answer: C) Pie chart

GROUP 3 – SELECT EIGHT (x4 marks each)

Question 24 -MCQ

What is a response variable in a correlation analysis?

a) The variable being explained

b) The variable doing the explaining

c) A measure of variability

d) A statistical test

Answer b) The variable doing the explaining

Question 25 -MCQ

What are the three main components of a time series?

a) Trend, Seasonality, and Irregular Component

b) Trend, Cyclical Component, and Random Component

c) Level, Growth, and Decay

d) Average, Median, and Mode

Answer a) Trend, Seasonality, and Irregular Component

Question 26 MRQ

Which are the types of correlation that can be found in a dataset?

A) Positive correlation
B) Negative correlation
C) Maximum correlation
D) No correlation

Answer A, B and D

Question 27 -MCQ

What is the primary advantage of using snowball sampling in a research study?

A) It allows for easy recruitment of participants from a specific population.
B) It ensures that the sample is representative of the overall population.
C) It helps to reduce bias in the data collection process.
D) It increases the likelihood of obtaining a diverse range of responses.

Answer A) It allows for easy recruitment of participants from a specific population.

Question 28 - MRQ

Which if the following are components of a time series?
A) Trend
B) Seasonality
C) Cyclical movement
D) Irregular variation

Answer A) Trend, B) Seasonality, C) Cyclical movement, D) Irregular variation

Question 29 – MRQ

Which of the following types of moving averages can be used to identify a trend in time series data?

A) Simple moving average
B) Weighted moving average
C) Diverse smoothing
D) Standard Deviation

Answer A)Simple moving average and B) Weighted moving average

Question 30 -MCQ

What is Spearman's rank correlation coefficient used for?
A) To measure the strength of a linear relationship
B) To rank data in order of magnitude
C) To calculate the median of a dataset
D) To identify outliers in a dataset

Answer B) To rank data in order of magnitude

Question 31 -MCQ

What is the purpose of seasonally adjusting values?

A) To identify trends in a dataset

B) To predict future values of a variable

C) To remove seasonal fluctuations from a dataset

D) To calculate the mean of a dataset

Answer C) To remove seasonal fluctuations from a dataset

Question 32 -MCQ

What is the purpose of regression analysis?

A) To identify trends in a dataset

B) To predict future values of a variable

C) To calculate the mean of a dataset

D) To remove seasonal fluctuations from a dataset

Answer B) To predict future values of a variable

Question 33 -MCQ

What is the product-moment correlation coefficient?

a) A measure of the strength and direction of a linear relationship between two variables

b) A statistical test for comparing means

c) A method for calculating a regression equation

d) A formula for calculating variance

Answer a) A measure of the strength and direction of a linear relationship between two variables

Question 34 -MCQ

What is a moving average?

a) A statistical technique used to identify trends in time series data

b) A method for smoothing out irregular components in a time series

c) A type of seasonal adjustment

d) A measure of variability

Answer b) A method for smoothing out irregular components in a time series

Question 35 - MCQ

What is a weighted index number?

a) A statistical technique used to identify trends in time series data

b) A method for smoothing out irregular components in a time series

c) A type of seasonal adjustment

d) A formula that gives more importance to certain items in a basket

Answer d) A formula that gives more importance to certain items in a basket

Question 36 - MCQ

What is the Laspeyres index number?

a) A weighted average that gives more importance to certain items in a basket

b) A statistical technique used to identify trends in time series data

c) A method for smoothing out irregular components in a time series

d) An unweighted average of a set of prices

Answer d) An unweighted average of a set of prices

Question 37 - MCQ

What is the difference between the product-moment correlation coefficient and Spearman's rank correlation coefficient?

a) The product-moment correlation coefficient uses actual values, while Spearman's rank correlation coefficient uses ranks

b) The product-moment correlation coefficient is used for ordinal data, while Spearman's rank correlation coefficient is used for interval data

c) The product-moment correlation coefficient is used for large datasets, while Spearman's rank correlation coefficient is used for small datasets

d) There is no difference between the two

Answer a) The product-moment correlation coefficient uses actual values, while Spearman's rank correlation coefficient uses ranks

Question 38 - MCQ

What is the trend on a time series graph?

a) A line that represents the overall movement of the data over time

b) A vertical line that represents the average value of the data

c) A horizontal line that represents the minimum value of the data

d) A diagonal line that represents the maximum value of the data

Answer a) A line that represents the overall movement of the data over time

Question 39 - MCQ

What is the purpose of a scatter diagram?

a) To show the relationship between two variables

b) To test for normality

c) To calculate the product-moment correlation coefficient

d) To identify outliers in a dataset

Answer a) To show the relationship between two variables

Question 40 -MCQ

What is the difference between correlation and causation?

a) Correlation measures the strength and direction of a linear relationship, while causation refers to the underlying reasons for the relationship

b) Correlation measures the underlying reasons for a relationship, while causation measures the strength and direction of a linear relationship

c) Correlation measures the average value of a variable, while causation measures the spread of a variable

d) There is no difference between correlation and causation

Answer a) Correlation measures the strength and direction of a linear relationship, while causation refers to the underlying reasons for the relationship

MCQ GROUP – SELECT SIX (x2 marks each)

Question 41 -TRUE/FALSE

True or False? The probability of two events occurring together is equal to the product of their individual probabilities.

Answer FALSE (Use the multiplication rule instead)

Question 42 - MCQ

Which of the following is a primary source of business data?

A) A company's financial statements

B) A market research report

C) The internet

D) A government publication

Answer A) A company's financial statements

Question 43 – MISSING WORD

A company is planning to conduct a survey to gather information about its customers. The sample frame would be all existing _____.

Answer: customers

Question 44 - MRQ

Which of the following are key benefits of using stratified random sampling in a research study?

I. Ensures that the sample is representative of the overall population

II. Reduces the risk of bias in data collection

III. Allows for more precise estimates of population parameters

IV. Increases the speed and efficiency of data collection

V. Is only applicable to small populations

Answers I, II, III

Question 45 -TRUE/FALSE

The sample fraction is the ratio of the sample size to the population size.

True or False

Answer True

Question 46 -MRQ

What are some common types of biases in sampling methods?

A. Non-response bias
B. Selection bias
C. Social desirability bias
D. Sampling frame error

Answer A, B, C, D

Question 47 -TRUE/FALSE

The box plot is used to show the median and quartiles.

True or False

Answer True

Question 48 -MCQ

What is the purpose of correlation analysis?

A) To identify the relationship between two variables

B) To predict future values of a variable

C) To calculate the mean of a dataset

D) To determine the variance of a dataset

Answer A) To identify the relationship between two variables

Question 49 -TRUE/FALSE

True/False The product moment correlation coefficient is always positive.

Answer False (can be positive, negative or zero)

Question 50 -MCQ

What is the purpose of forecasting future values?

a) To predict future values of one variable based on another variable

b) To test for normality

c) To calculate the product-moment correlation coefficient

d) To identify outliers in a dataset

Answer a) To predict future values of one variable based on another variable