



UNIVERSITY OF KELANIYA – SRI LANKA

Centre for Distance and Continuing Education

FACULTY OF COMMERCE & MANAGEMENT STUDIES

Bachelor of Commerce (Special) Degree Second Year Examination (External) – 2022

December 2024

BCOM E2035 – Business Statistics

No. of questions: Six (06)

Time: 03 hours

Answer any five (05) questions.

Question No. 01

- a). Name four (04) basic steps in “Business Statistics”.
(04 Marks)
 - b). What is the difference between “Statistical experiment” and “Statistical Investigation”.
(04 Marks)
 - c). Indicate two examples for each term given below:
 - i). Qualitative Variable
 - ii). Quantitative Variable
 - iii). Interval Measurement Date
 - iv). Normal Measurement Date
(08 Marks)
 - d). “Samples results can be more accurate than population results”. Explain this statement.
(04 Marks)
- (Total 20 Marks)**

Question No. 02

- a). What is meant by “Skewness”. What is its role when determining a shape of a distri button.
(06 Marks)
- b). The number of defective items found by a quality control supervisor in a fifteen-day period is shown below.

3, 10, 8, 4, 6, 10, 12, 6, 10, 7, 11, 9, 1, 13, 14

Complete the below- mentioned descriptive statistical measures and interpret the results.

- i). Mean
- ii). Mode
- iii). Median
- iv). Range
- v). Semi-inter quartile range
- vi). Variance
- vii). Standard deviation

(14 Marks)

(Total 20 Marks)

Question No. 03

- a). Write three (03) examples for random experiments. (03 Marks)
- b). What is meant by an “Event”? (02 Marks)
- c). If a random experiment is conducted to examine families with three (03) children, write down the relevant sample space. (03 Marks)
- d). Write down at least two (02) boys in a family. (02 Marks)
- e). What is the difference between mutually exclusive event and classical event? (04 Marks)
- f). Consider the random experiment of flipping a fair coin and observing the side that lands up.
 - i). What is the sample space here? (01 Marks)
 - ii). What are the equally likely events that can happen here. (02 Marks)
 - iii). If the coin used in this experiment is biased, can A and B be considered classical events?
(A = Getting head B = Getting tail) (03 Marks)

(Total 20 Marks)

Question No. 04

a). Define “Conditional Probability”.
(04 Marks)

b). Mention any two (02) condition about the to conditional probability you defined above.
(04 Marks)

c). Consider the experiment of tossing two (02) fair coins.

A = the first fall of the heads

B = both coins fall heads

i). If so, write down the relevant sample space.
(02 Marks)

ii). If at least one coin lands head, fine the conditional probability that both coins land tails.
(04 Marks)

d). Below is the information obtained from a group of hundreds of people.

A= number of people who smoke

B= number of people who wear glasses

$$n(A)= 53$$

$$n(B)= 40$$

$$n(A \cap B)=20$$

If a person is randomly selected from the above group and it is known that person wear glasses, what is the probability that he is a smoke?

(06 Marks)

(Total 20 Marks)

Question No. 05

a). Explain the difference between the independent variable and dependent variable in a regression model.
(04 Marks)

b). Why is it essential important to use a scatter plot to show the relationship between variables in a simple regression model?
(02 Marks)

- c). The marks obtained by ten (10) students in the G.C.E. (A/L) Examination for the common test and the marks obtained in the entrance examination for admission to the faculty of law are given below.

Common Test Marks (x)	60	50	80	80	70	60	100	40	90	70
Entrance test marks to the Law Faculty (y)	80	70	70	100	50	80	100	60	80	60

- i). Create a scatter plot for the above data (01 Marks)
- ii). Find the regression line x on y. (06 Marks)
- iii). Find the regression line y on x. (03 Marks)
- iv). Interpret the results you obtained above i) and ii). (04 Marks)
- (Total 20 Marks)**

Question No. 06

- a). Name three (03) characteristics of a good estimator. (06 Marks)
- b). How is point estimation different from the interval estimation. (06 Marks)
- c). The following is the number of millilitre of essential oils contained in a hair growth ointment manufactured according to a traditional medical prescription.
189, 208, 204, 205, 205, 210, 232, 188, 200, 199, 234, 210, 178, 212, 210,
- i). Find the mean value of the content of hair growth ointment. (04 Marks)
- ii). Assuming that the above data is distributed in a normal distribution and its standard deviation is thirty (30) milliliters.
Calculate the standard error of the mean. (04 Marks)
- (Total 20 Marks)**

Formula Sheet- Business Statistics

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$$

$$\mu = \frac{\sum_{i=1}^N x_i}{N}$$

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

$$\bar{x} \pm t_{\alpha/2, n-1} \frac{s}{\sqrt{n}}$$

$$a = \frac{[(\sum y)(\sum x^2) - (\sum x)(\sum xy)]}{[n(\sum x^2) - (\sum x)^2]}$$

$$b = \frac{[n(\sum xy) - (\sum x)(\sum y)]}{[n(\sum x^2) - (\sum x)^2]}$$

$$\bar{x} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$\sigma^2 = \frac{\sum_{i=1}^N (x_i - \mu)^2}{N}$$

$$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}$$

$$\sigma = \sqrt{\frac{\sum_{i=1}^N (x_i - \mu)^2}{N}}$$

$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}}$$

$$(\sigma_{\bar{x}}) = \frac{\sigma}{\sqrt{n}}$$

