



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) – 2023

April 2025

BCOM E2035 – Business Statistics

No. of questions: Seven (07)

Time: 03 hours

Answer any Five (05) questions only.

Question No. 01

- a). The Information obtained from a “Statistical Investigation” is more complete than the information obtained from a “ Statistical Survey”.
Explain this Statement with two examples.

(05 Marks)

- b). Indicate two examples for each term below.

- i). Census
- ii). Continuous Variable
- iii). Ratio Scale measurement data
- iv). Ordinal Scale measurement data

(08 Marks)

- c). i). Define “Data”.

(02 Marks)

- ii) Mention two main methods of collecting data.

(02 Marks)

- iii). Mention with examples three main ways in which data can be presented.

(03 Marks)

(Total 20 Marks)

Question No. 02

- a). What is the difference between a histogram and a bar chart ?

(04 Marks)

- b). What are the steps to follow when creating a histogram?

(06 Marks)

- c). A certain manufacturer, in order to investigate the maximum load that the steel wires produced by his company could bear, took a sample of fifty (50) wires and recorded the maximum load they could bear , and prepared the following frequency distribution.

Maximum Load Capacity (Ton)	Number of Wires
10.5-10.8	06
10.9-11.2	10
11.3-11.6	15
11.7-12.0	12
12.1-12.4	04
12.5-12.8	03

The maximum load that the wire can bear

- i) Create a histogram and compute
- ii) Mean
- iii) Median
- iv) Mode

(08 Marks)

- v) What conclusion can the manufacturer draw from these measurements ?

(02 Marks)

(Total 20 Marks)

Question No. 03

- a). Name and explain two basic measures used to identify the shape of a distribution. (04 Marks)

- b). Comparatively explain the functions performed by the following measurements.

- i). Range
- ii). Inter Quartile range
- iii). Mean Deviation

(06 Marks)

- c). The following data relates to the scores recorded by a team involved in the game of baseball.

8, 13, 21, 15, 9, 84, 27, 10, 42, 6

Calculate the following measures of dispersion and comment on them.

- i). Range
- ii). Inter Quartile Range
- iii). Mean Deviation
- iv). Variance
- v). Standard Deviation
- vi). Coefficient of Variation

(10 Marks)

(Total 20 Marks)

Question No. 04

- a). What is meant by “Probability”?
(04 Marks)
- b). Explain the following probability approaches with examples.
i). Classical approach
ii). Relative Frequency Approach
(06 Marks)
- c). A Woman was applied for jobs at two organizations, A and B. She estimates that her chance of getting a job offer from A is 0.4 and from B is 0.3. Assuming that an offer a job from one firm is independent of an offer from the other firm, find the probability of each of the following situations.
i). Neither firm offers her a job
ii). She will get at least one offer
iii). Firm A does not offer her a job but firm B does.

(10 Marks)

(Total 20 Marks)

Question No. 05

- a). Write the probability function of a binomial distribution.
(03 Marks)
- b). A Fair coin is tossed ten times. What is the probability of obtaining :
i). Four Needs
ii). Less than four needs
iii) Find the mean and the standard deviation of the distribution.
(06 Marks)
- c). Write Down the Probability density function, mean and variance of the poisson distribution.
(04 Marks)
- d). The average number of errors on a page of a book is 1.4. What is the probability that a page will contain four errors?
(04 Marks)
- e). What is the variance of this distribution?
(03 Marks)

(Total 20 Marks)

Question No. 06

- a). The following is information about the savings and income of ten individuals (In thousands of rupees)

Weekly Saving = Y

Weekly Income = X

X	19	22	27	30	36	43	47	51	61	64
Y	1.0	1.4	1.8	2.4	3.0	3.8	4.3	4.5	5.8	6.3

Summary measurements related to the above data are shown below.

$$\sum X = 400 \quad \sum y^2 = 147.47 \quad \sum x^2 = 18.246$$

$$\sum y = 34.3 \quad \sum xy = 1630.4$$

Estimate the regression model using the above summary measurements.

(05 Marks)

- b). Write the following to test the significance of the regression model.

- Hypothesis
- Standard Error
- Test Statistics
- Complete the correction coefficient.

(06 Marks)

- v). If the value in the table for the t- distribution at 5% level of significances is 1.86. Test the significance of the estimated model.

(06 Marks)

- vi). Write down the conclusion of the test.

(03 Marks)

(Total 20 Marks)

Question No. 07

- a). Name four basic properties of a normal distribution.

(08 Marks)

- b). What is the relationship between the Central Limit Theorem and the Normal distribution?

(03 Marks)

- c). If the weights of five hundred students are in a normal distribution with a mean of 68 kilograms and a standard deviation of 3 kilograms, how many students weigh more than 72 kilograms?

(03 Marks)

- d). How many students weigh between 65 and 72 kilograms?

(03 Marks)

- e). How many students weigh less than 65 kilograms?

(03 Marks)

(Total 20 Marks)

Formula Sheet- Business Statistics

$\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$	$\mu = \frac{\sum_{i=1}^N x_i}{N}$
$M_d = L + \frac{fc}{fm} w$	$M_o = L + \frac{\Delta_1}{\Delta_1 + \Delta_2} + w$
$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$	$\bar{x} \pm t_{\frac{\alpha}{2}, n-1} \frac{s}{\sqrt{n}}$
$a = \bar{y} - b\bar{x}$	$b = \frac{\sum x_i y_i - n\bar{x}\bar{y}}{\sum x_i^2 - n\bar{x}^2}$
$\bar{x} \pm z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$	$\sigma^2 = \frac{\sum_{i=1}^N (x_i - \mu)^2}{N}$
$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}$	$\sigma = \sqrt{\frac{\sum_{i=1}^N (x_i - \mu)^2}{N}}$
$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}}$	$SEE = \sqrt{\frac{\sum y_i^2 - a\sum y_i - b\sum x_i y_i}{n-2}}$
$(\sigma_{\bar{x}}) = \frac{\sigma}{\sqrt{n}}$	