UGANDA MARTYRS UNIVERSITY
NKOZI

UNIVERSITY EXAMINATIONS

FACULTY OF BUSINESS ADMINISTRATION

DEPARTMENT OF ECONOMICS

INTRODUCTION TO STATISTICS FOR ECONOMICS

STA 1101

BACHELOR OF ARTS WITH EDUCATION

DATE: **Tuesday 13 December 2022**

TIME: **09:30am – 12:30pm**

Instructions:

1. This examination consists of **EIGHT** questions.
2. Attempt any **FIVE** questions. Each question caries 20 marks.
3. Do not write anything on the questions paper.
4. Carefully read through ALL the questions before attempting.
5. No **names** should be written anywhere on the examination booklet.
6. Ensure your work is **clear** and **readable**. Untidy work shall be penalized.
7. Any type of examination Malpractice will lead to automatic disqualification.
8. Ensure that your **ID number** is indicated on all pages of the examination answer booklet.

QUESTION ONE

(a) What are measures of central tendency as used in statistics? **(1 mark)**

(b) Mention any three measures of central tendency you know. **(3 marks)**

(c) Construct a frequency distribution table for the following figures of weights obtained from 36 elements of Economics students in Uganda Martyrs University using a class width of 3 and starting with the class 56-58. **(8 marks)**

66	70	68	67	71	60
64	70	68	65	64	61
71	66	67	65	68	59
67	65	68	66	69	58
66	65	65	71	70	56
57	60	62	56	59	72

(d) Using the frequency distribution table in 4 (c) above, find the;

(a) Mean weight **(2 marks)**

(b) Modal weight **(3 marks)**

(c) Median weight of the students. **(3 marks)**

QUESTION TWO

(a) For a regression line $y = a + bx$, show that;

$$a = \frac{\sum y - b\sum x}{n}$$

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

(7 marks)

(b) A new computer circuit was tested and the times (in micro seconds) required to carry out different subroutines were recorded as follows.

x	1	2	3	4
y	1	5	8	13

(i) Calculate the values of a and b for the given data for the regression line $y = a + bx$ **(6 marks)**

(ii) Hence estimate y when $x = 2.5$ **(2 marks)**

(iii) Sketch the scatter diagram for the data above. **(4 marks)**

(iv) Is there a linear relationship between the variables x and y? **(1 mark)**

QUESTION THREE

(i) Distinguish the following terms as used in statistics.

(a) A sample and a population **(2 marks)**

(b) A parameter and a statistic **(2 marks)**

(ii) Why do you think most researchers choose to use a sample instead of the population in their surveys? **(2 marks)**

(iii) Consider the figures of monthly salaries in dollars extracted from the accounts department of an organization.

440, 430, 515, 420, 490, 438, 435, 438, 500, 510 and 600

Using the data above, find the;

(a) Mean salary **(2 marks)**

(b) Median salary **(2 marks)**

(c) Variance **(5 marks)**

(d) Standard deviation **(1 mark)**

(e) Mean deviation of the data **(4 marks)**

QUESTION FOUR

(a) Differentiate between correlation analysis and regression analysis. **(4 marks)**

(b) The following sample data shows X, as the price charged for a particular item (in dollars) and Y as the quantity of that item sold.

Price per piece (X)	5	6	7	8	9
Number of pieces sold (Y)	55	53	45	40	20

(i) Plot the scatter diagram. **(4 marks)**

(ii) Draw the line of best fit. **(1 mark)**

(iii) Comment on your graph. **(1 mark)**

(iv) Compute spearman's rank correlation coefficient. **(8 marks)**

(v) Describe the direction and strength of the relationship between the price and the quantity sold. **(2 marks)**

QUESTION FIVE

(a) (i) Define what is meant by a variable. **(1 mark)**

(ii) Differentiate between qualitative and quantitative classification of data giving two examples of each. **(6 marks)**

(iii) What do we mean by a sample in relation to a population? **(1 mark)**

(b) Some of the scales of measurement of data are

(i) Interval scale

(ii) Nominal scale

(iii) Ratio scale

(iv) Ordinal scale

With relevant examples, briefly explain the scales above. **(12 marks)**

QUESTION SIX

(a) Write short notes on each of the following measures of dispersion. Write down the formula of each.

(i) Range

(ii) Variance

(iii) Standard deviation

(iv) Mean deviation

(v) Coefficient of variation

(15 marks)

(b) What is the usefulness of variance? **(1 mark)**

(c) Describe two disadvantages of the variance. **(4 marks)**

QUESTION SEVEN

The following table gives the frequency distribution of a monthly expenditure on food of a sample of 100 households in a country.

Expenditure	Frequency
220– 229	5
230 – 239	8
240 – 249	13
250 – 259	22
260 – 269	32
270– 279	13
280 – 289	10
290-299	7

Determine the

i. Range
ii. Variance
iii. Standard deviation
iv. Mean deviation
v. Coefficient of variations
vi. Explain your answers ***(20 marks)***

QUESTION EIGHT

(a) Define the term probability. **(1 mark)**

(b) State any three basic rules of probability. **(3 marks)**

(c) Differentiate between the following concepts as used in probability.

(i) Outcome and an event. **(2 marks)**

(ii) Mutually exclusive events and independent events. **(2 marks)**

(iii) Random experiment and a sample space. **(2 marks)**

(d) A bag contains 4 red balls, 2 white balls and 6 blue balls. One ball is picked at random from the bag. What is the probability that it is;

(i) Red **(3 marks)**

(ii) Non-red **(3 marks)**

(iii) Blue or red **(4 marks)**

SUCCESS