

LAIKIPIA



UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2023/2024 ACADEMIC YEAR

SECOND YEAR EXAMINATION FOR THE DEGREE
OF BACHELOR OF AGRIBUSINESS MANAGEMENT

AGBM 213: BUSINESS STATISTICS I

STREAM:

TIME: 2 HRS

DAY: THURSDAY [11.30-13.30 P.M]

DATE: 14/12/2023

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

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INSTRUCTIONS : Answer **QUESTION ONE** and any **OTHER TWO** questions

QUESTION ONE

- a) Distinguish between;-
 - i) Continuous and discrete variable **(2 marks)**
 - ii) Kurtosis and Skewness **(2 marks)**
 - iii) Sample and population **(2marks)**
- b) From the following data, compute the required measures of central tendency.
25,30,21,55,47,10,15,17,45,35
 - i) Arithmetic mean **(2marks)**
 - ii) Geometric mean **(3marks)**
 - iii) Harmonic mean **(3marks)**
- c) The data below is for the students marks scored in a test.

Marks	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
Number of students	4	7	16	20	15	8

- i) Present the information in a histogram **(6marks)**
- ii) Use the histogram in (i) above to determine the mode **(3 marks)**
- iii) Superimpose a frequency polygon on the histogram in (i) above **(1 mark)**
- iv) Calculate the median mark **(3 marks)**
- d) Explain any Three properties of normal/ continuous probability distribution **(3 marks)**

QUESTION TWO

- (a) Suppose that on an average 1 house in 1000 in Nyahuru sub-county has a fire during a year. If there are 2, 000 houses in that sub county, what is the probability that exactly 5 houses will have a fire during the year? (Apply Poisson distribution). **(3 Marks)**



(b) Find the probability that the following outcomes were observed.

- i) Only one person had the disease **(3marks).**
- ii) Exactly two people had the disease **(3marks)**
- iii) At most two people had the disease **(3marks)**

(b) A manufacturing firm produces 45000 units of nuts. The probability of having a defective nut is 0.15. Calculate;

- i) The expected number of defective nuts **(3 marks)**
- ii) The variance **(3 marks)**
- iii) The standard deviation **(2 marks)**

QUESTION THREE

a) A grinding machine is so set that its production of shafts has an average diameter of 10.10 cm and a standard deviation of 0.20 cm. the product specifications call for shaft diameters between 10.05cm and 10.20 cm. What production of output meets the specifications presuming normal distribution? **(8 Marks)**

b) (i) Calculate Spearman’s correlation coefficient between marks assigned to ten students by Judges X and Y in a certain competitive test as shown below. (9 marks)

Student	1	2	3	4	5	6	7	8	9	10
Marks by judge X	5	5	4	6	4	4	7	3	5	7
Marks by judge Y	6	8	3	8	7	8	5	3	5	5

(ii) Interpret your answer in (i) above **(3 marks)**

QUESTION FOUR

a) A financial manager speculates about the relationship between family income and their allocation of investment. The table below shows the results of a survey of 8 randomly selected families.



Monthly income Kshs (000)	Investment (%)
8	36
12	25
9	33
24	15
13	28
37	19
10	20
16	22

- (i) Develop a regression equation for the data **(12 marks)**
- (ii) Determine the investment at an income level of Kshs 20000. **(3 marks)**
- (iii) Determine the covariance from the information given in (a) above **(3 marks)**
- b) Distinguish between correlation and regression **(2 marks)**

QUESTION FIVE

A transport company operates several fleets of trucks that are used to transport various kinds of cargo to different destinations. The management board is in the process of selecting a brand of tyres to be used on the fleets of trucks. Two brands of tyres, X and Y, are tested and the following results are obtained.

Life (in '000 miles)	Number of tyres	
	X	Y
20 – 25	1	0
25 – 30	22	24
30 – 35	64	76
35 – 40	10	0
40 – 45	3	0

- i) Calculate which brand of tyres has greater average life **(6 marks).**
- ii) If you were in the management board, mathematically establish the brand of tyres that you would recommend the company to use on its fleets of trucks using the concept of standard deviation and coefficient of variation **(14 marks).**

