



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**THIRD AND SECOND YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION EXTENSION  
AND BACHELOR OF SCIENCE IN ANIMAL SCIENCE**

**2021/2022 ACADEMIC YEAR**

**REGULAR**

---

**COURSE CODE: AAB 1210/SBI 1312**

**COURSE TITLE: INTRODUCTION TO STATISTICS /BIOSTATISTICS I**

**EXAM VENUE: STREAM: BSc. (Animal Science & AGED)**

**DATE: EXAM SESSION:**

**TIME: 2 HOURS**

---

**Instructions:**

**Answer ALL questions in section A and ANY other 2 Questions in section B.**

- 1. Candidates are advised not to write on question paper.**
- 2. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

**SECTION A: 30 MARKS (ANSWER ALL THE QUESTIONS)**

**QUESTION ONE [6 MARKS]**

Define the following terms with examples:

- a. Variable [2 Marks]
- b. Measure of variability [2 Marks]
- c. Discrete Qualitative variable [2 Marks]

**QUESTION TWO [6 MARKS]**

For the data:

---

55	85	90	50	110	115	75	85	8	23
70	65	50	60	90	90	55	70	5	31

---

Compute the:

- a. Mode [1 Mark]
- b. Mean [2 Marks]
- c. Median [3 Marks]

**QUESTION THREE [9 MARKS]**

For the following measurements: 13, 21, 9, 15, 13, 17, 21, 9, 19, 23, 11, 9, 21. Find the:

- a. Median [2 Marks]
- b. Lower and upper quartiles [4 Marks]
- c. Quartile deviation [3 Marks]

QUESTION FOUR [9 MARKS]

An agricultural store has the following entries in one of the records.

Unit	Yield	Treatment	Variety	Remarks
1	11.8	A	1	Good
2	7.8	B	1	Poor
3	9.7	C	2	Fair
4	6.4	D	2	Poor
5	8.3	A	3	Fair
6	10.6	B	3	Good
7	15.5	C	4	Excellent
8	14.8	D	4	Excellent

Using the table answer the questions:

- i. Identify three variables in the dataset [3 marks]
- ii. For each variable state its type [3 marks]
- iii. Classify information in each column according to its scale of measurement [4 marks]

**SECTION B: 40 MARKS (ANSWER ANY TWO QUESTIONS)**

**QUESTION 5 [20 MARKS]**

The county assembly in Siaya plans to expand the items on which cess tax would be imposed. 30 possible tax rates (as percentage of value of goods) were proposed as follows.

---

26	28	30	37	33	30
29	39	49	31	38	36
33	24	34	40	29	41
40	29	35	44	32	45
35	26	42	36	37	35

---

- a. Present the data using a grouped frequency table showing
  - i. Classes limits; frequency; class boundaries
  - ii. Cumulative frequencies [10 mark]
- b. i. Draw the histogram for the data
  - ii. Include the frequency polygon for the data
  - iii. Use the histogram to state the skewness of the data [10 marks]

**QUESTION 6 [20 MARKS]**

To find the correlation between amount of milk produced by a cow and quantity of dairy meal it is fed on the following data were recorded:

Amount (litres)	41	98	25	85	50	73
Quantity (kg)	8	17	4	12	5	14

- a. i. Identify the Predictor and Response variables [2 Marks]
  - ii. Determine total variation in the response variable [5 Marks]
- b. i. Calculate the Pearson’s coefficient of variation between the variables [12 Marks]
  - ii. Explain the correlation between the amount of milk produced and quantity of dairy meal a cow is fed on [3 Marks]

QUESTION 7 [20 MARKS]

- a. i. Distinguish between Pearson’s correlation coefficient and Spearman’s rank Correlation coefficient [2 Marks]

ii The following is the distribution of annual profits made by 44 different agricultural producer entities:

Profit ‘000	0-4	5-9	10-14	15-19	20-24	25-29	30-34
No of entities	2	6	8	12	10	4	2

Calculate the:

- i. modal profit  
 ii. mean profit  
 iii. standard deviation [8 marks]
- b. In a study of two variables X and Y which have a linear relationship, it is found that:  
 $\sum x = 75, \sum y = 42, \sum xy = 825, \sum x^2 = 1375, \sum y^2 = 514, n = 5$
- i. Find the total variation in model relating X and Y [4 marks]  
 ii. Find the correlation between X and Y [6 marks]

QUESTION 8: [[20 MARKS]

- a. i. Explain the difference between Regression and Correlation [2 marks]
- iii. The following are the marks awarded by two judges X and Y to eight exhibitors during an ASK show:

	Exhibitors							
	A	B	C	D	E	F	G	H
Judge X	52	53	42	60	45	41	46	38
Judge Y	65	68	43	38	77	48	35	30

Calculate the Spearman’s rank correlation coefficient [10 marks]

- b. The following data shows the distribution of yield attained by 100 households in a ward during the last crop season.

Yield	0-5	6-11	12-17	18-23	24-29
Number of households	7	18	25	30	20

Calculate the:

- i. Lower quartile ( $Q_1$ )
- ii. Upper quartile ( $Q_3$ )
- iii. Quartile Deviation
- iv. Median Yield

[10 marks]