

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS.

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF B.Sc (AGRICULTURE)

AGRI 291: STATISTICS FOR AGRICULTURE

STREAMS: BS.c AGRI, Y2S2

TIME: 2HOURS

DAY/DATE: THURSDAY 7/12/2017

2.30 P.M - 4.30 P.M.

INSTRUCTIONS:

- Answer **ALL** the questions **in Section I** and **ANY TWO** Questions **in Section II**
- Use of calculators and statistical tables is allowed.
- Do not write anything on the question paper.

SECTION I

QUESTION ONE

- (a) Explain the fundamental components that characterize every experimental designs. [6 Marks]
 (b) Discuss the stages of sampling process. [6 Marks]

QUESTION TWO

Nine students were asked to rate two milk products on a scale of 1-9, and the results are presented below:

Student	1	2	3	4	5	6	7	8	9
Product A	4	8	5	2	6	5	4	5	7
Product B	6	4	2	6	9	3	7	8	5

Using an appropriate non-parametric method, determine if the two variables have equal rating at 5% significance level. [8 Marks]

QUESTION THREE

A genetics lecture decides to give multiple choice test consisting of 10 questions each with 4 possible answers one of which is correct. A student who feels that his chances of passing the test are very slim decides to guess in all the ten questions. What is the probability that this student will get at least 8 questions correct? [6 Marks]

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QUESTION FOUR

In an experiment, the expected distribution of purple, yellow and white seed kernel is 1:1:2, respectively. A random sample of 300 plants was taken and 45, 65 and 190 kernel were purple, yellow and white, respectively. Does the observed information agree with the expected ratios at 5% significant level? [6 Marks]

SECTION II

QUESTION FIVE

(a) Given the following data set, calculate the mean, median, mode and standard deviation, Pearson measure of skewness and coefficient of variation of successive sale. [14 Marks]

Number of Sales	0-4	5-10	11-16	17-22	23-28	29-34
Number of salesmen	8	20	40	66	52	32

(b) The following weight gains were obtained before and after feeding animals with a certain ration:

Before	260	380	400	220	320	380	360	460
After	340	440	340	280	280	420	340	480

At a 5% level of significance, determine if there is significant change in weight gain before and after the treatment application. [6 Marks]

QUESTION SIX

The following data was obtained from an experiment conducted to investigate effects of anthropogenic increase in carbon dioxide on plant defense against invasive insects using five maize varieties.

Number of plants with a compromise defense			
Tree Species	Replicate 1	Replicate 2	Replicate 3
A	42	42	37
B	49	38	40
C	37	38	43
D	36	39	38
E	51	50	53

Perform analyze of variance and test if the five varieties of maize are significantly different in their defense compromise against invasive insect at 5% probability level. [20 Marks]

QUESTION SEVEN

(a) The following data was obtained from an experiment: 100, 114, 150, 74, 108, 180, 134, 188, 142, 102, 52, 168, 64, 94, 126, 136 and 102. Construct a 95% and 99% confidence interval for the population mean. [12 Marks]

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(b) The following data shows the relationship between the phosphorous rates and plant root yield in grams.

Phosphorous	0	1	2	3	4	5	6	7
Root yield	60	90	160	190	290	370	390	470

Fit a regression line to the above for predicting the root yield.

[8 Marks]

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