CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD DEGREE OF
MASTER OF AGRICULTURAL ECONOMICS**

AGEC 850: STATISTICS FOR AGRICULTURAL ECONOMICS

STREAM: AGEC Y1 S1   **TIME: 3 HOURS**

DAY/DATE: THURSDAY 9/04/2020   **11.30 A.M - 230 P.M.**

INSTRUCTIONS:

- Answer any **THREE** Questions
- Use of calculators and statistical tables is allowed
- Do not write anything on the question paper

QUESTION ONE

The following results are coded prices of two agricultural products (Facto A) sampled at three local markets (Factor B).

Local markets	Replicate	Arrowroots	Sweet potatoes
Chuka	1	29	25
	2	30	23
	3	31	22
Embu	1	23	14
	2	25	21
	3	26	20
Nyeri	1	25	21
	2	27	23
	3	27	22

(a) Write down the statistical model. [3 Marks]

(b) Carry out the analysis of variance. TSS=279.78, SSAB=4.78. Use a=0.05.[14 Marks]

(c) Perform Least Significance Difference (LSD) for means of the Factor B. Use a=0.05.
[3 Marks]

QUESTION TWO

(a).The following computer output show two sets of the analysis of results form an experiment on the effect of media type and temperature of bacteria growth. Interpret the two outputs.
[12 Marks]

Model 1-Response variable: Growth rate

Analysis of Variance

Source	df	SS	MS	F-Value
Regression	1	249798.01	249798.01	15.628
Error	145	2269682.63	15983.68	
Total	143	2519480.64		

Estimates of regression coefficients

Variable	df	Estimate	StdError	t
Intercept	1	868.68	189.80	4.577
Temperature	1	-16.205	8.95	-1.811
Growth media	1	0.14	0.0996	1.438

(b).Discuss three assumptions that are usually made in the analysis of variance and discuss one possible solution if some of the assumptions are not met. [8 Marks]

QUESTION THREE

(a) Using the following statistics determine if there is a difference between the means between population A and B. Use a=0.05 ?   [6 Marks]

Measurement	Population A	Population B
Sample mean	3.4	4.5
Sample size	12	12
Population variance	1.5	1

(b) A survey to determine the proportions of literate and illiterate farmers who use AI was carried out. Sample of 120 literates and 1500 illiterate farmers were taken and it was found that 70 illiterate farmers use AI for their animals while 50 literate ones use AI. At 5% probability level, test the claim that more literate farmers use AI.   [8 Marks]

(b) Discuss the various types of data measurements scale.   [4 Marks]

QUESTION FOUR

(a) Using the following sample data set that was obtained from two populations (A and B), construct a 95% and 99% confidence interval for the population mean.   [12 Marks]

A	23	25	33	47	58	34	37	17	14	35	53	45	40	37	
B	41	40	51	65	73	53	57	34	30	57	69	83	78	79	90

(b) A random sample of 6 agricultural sector workers and 5 industrial workers was taken and their monthly incomes obtained as follows:

Agricultural	40000	32500	38500	49500	56000	42000
Industrial	52500	36000	48500	60000	59000	

Using an appropriate non-parametric method, determine if earnings for agricultural sector and industrial sector are the same at 5% significance level.   [8 Marks]