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UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION

PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY YEAR 3

COURSE CODE: CP 307

TITLE OF PAPER: FIELD EXPERIMENTATION

TIME ALLOWED: TWO (2) HOURS

INSTRUCTION: ANSWER QUESTIONS 1 AND 2, WHICH ARE COMPULSORY AND ANY OTHER TWO QUESTIONS OF YOUR CHOICE

NOTE: STUDENTS TO BE PROVIDED WITH GRAPH PAPER

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QUESTION 1
(THIS IS A COMPULSORY QUESTION)

Write on the following [a to g]. Each answer carries four marks
[a]. Factors affecting number of replicates in an experiment.
[b]. Methods of randomizing treatments in an experiment.
[c]. Randomised complete block design.
[d]. Use of counter [coin] method as a tool for preferential
[e]. LSD.
[f]. Correlation.
[g]. Concept note.

[28 Marks]

QUESTION 2

(THIS IS A COMPULSORY QUESTION)

(a) Table 1 shows maize yields from a two-factor experiment on the effects of four sources of kraal manure and three rates of each. Compute the data for the two main effects draw graph for each main effects and the interactions and interpret your results.

Table 1. Maize yield of kraal manure from four sources and three rates of each.

Source of kraal manure	Rates of kraal manure [tonnes/ha]	Seed yield [kg/ha]
Highveld	0	1,678
Highveld	30	4,509
Highveld	60	7,988
Middlveld	0	1,243
Middleveld	30	4,987
Middleveld	60	7,465
Lowveld	0	1,879
Lowveld	30	5,609
Lowveld	60	8,967
Lubombo	0	1,298
Lubombo	30	4,609
Lubombo	60	6,976

(16 Marks)

(b) Table 2 shows ANOVA table for a two factor experiment. Factor A were four sources of kraal manure and factor B were three rates of each manure source. The experiment was replicated four times. Complete Table 2. (12 Marks)

Table 2. ANOVA table [uncompleted] for a two-factor experiment

Source of variation	Degrees of freedom	Sum of squares	Mean square	F value
Replication		121809.3		
Factor A		132659.8		
Factor B		42851.2		
Interaction		23998.3		
Error		741234.3		Not applicable
Total		Not applicable	Not applicable	Not applicable

[28 Marks]

QUESTION 3

I. From the information below, complete the ANOVA table.

[a] Title: Effects of four maize varieties at five times of planting on seed yield.

[b] The researcher has no prior knowledge on the performance varieties nor of their response to time of planting.

[c] Number of replicates: 4

[d] Plot size: Five rows each 6 m long

[e] Inter- and intra-row spacing: As recommended for Luyengo community.

[I] Complete the table from information above [Reproduce this table in your answer script].

Source of variation	Degrees of freedom

[11 Marks]

II. If the researcher wishes to apply 300 kg/ha of a compound fertiliser [2-3-2 (22)] and 25 kg/ha of nitrogen, how many grams of the compound fertiliser should he apply per plant? If the source of nitrogen is urea, how many grams of urea should the researcher apply per plant   [11 Marks]

(22 Marks)

QUESTION 4

"Conducting research on crops in Swaziland is really a waste of taxpayers money".
Discuss the above statement.

[22 Marks]

QUESTION 5

Explain why agronomy students should be involved in carrying out field surveys, an
area that is meant for social scientists.

[22 Marks]