

NATIONAL UNIVERSITY OF LESOTHO

FACULTY OF AGRICULTURE

B.Sc. AGRICULTURE

CPS: 316 RESEARCH METHODOLOGY

AUGUST 2020

MARKS: 100

TIME: 3HRS

INSTRUCTIONS: ANSWER ALL THE QUESTIONS

QUESTION 1 [15 marks]

Compare and contrast the following

- a) Randomized Complete Block Design, Completely Randomized Design and Latin Square Design. (15)

QUESTION 2 [20 marks]

With the dataset provided from experiment with a lay-out of randomized complete block design, construct an analysis of variance and populate it. Show all the calculations.

Cultivars	Yield of maize ton/ha		
	Rep 1	Rep 2	Rep 3
PAN 6413	2.5	2.7	2.4
PAN 5681	1.9	1.2	1.8
Phi 324	5.2	5.7	5.9
CG1414	3.2	3.4	3.3
SNK 292	5.6	5.2	5.4
Kalahari	1.1	5.9	5.7

QUESTION 3 [15 marks]

Define the following statistics terms and give an example;

- a) Experiment
- b) Control
- c) Treatment
- d) Replication
- e) Source of variance

QUESTION 4 [25 Marks]

- a) Distinguish between the dependent and the independent variables (6)
- b) Discuss the holistic process of sampling in details (8)
- c) Discuss the importance of a problem in research and its sources (6)
- d) Identify five studies considered to be experimental (5)

QUESTION 5 [25 Marks]

- a) Describe the following levels of measurement

- i. Nominal
- ii. Ordinal
- iii. Interval
- iv. Ratio (12)

b) Define the following terms applied in research:

- i. Hypothesis (4)
 - ii. Confounding variables (4)
- c) Describe the research process generally (4)
- d) Distinguish between validity and reliability (4)