"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

NACP 214: RESEARCH METHODS

END OF SECOND SEMESTER SUPPLEMENTARY EXAMINATIONS

AUGUST 2021

LECTURER: MR. E. CHIKAKA

DURATION: 7 HOURS

INSTRUCTIONS

ANSWER **ANY ONE** QUESTION

PLEASE STICK TO THE STANDARD HOUSE STYLE i.e.

- TIMES NEW ROMAN
- FONT SIZE 12
- DOUBLE SPACING
- APA REFERENCING
- SEND YOUR ANSWER AS A PDF DOCUMENT

THE MARK ALLOCATION FOR EACH QUESTION IS INDICATED AT THE END OF THE QUESTION

CREDIT WILL BE GIVEN FOR LOGICAL, SYSTEMATIC AND NEAT PRESENTATION

QUESTION 1

a. What do you mean by research? Explain its significance in the achievement of sustainable Agriculture in your country. [3, 7]

b. "A researcher has to work as a judge and derive the truth and not as a lawyer who is only eager to prove his case in favour of his plaintiff." Discuss the statement pointing out the objectives of agricultural research. [10]

c. "*Research is a venture towards discovery. Before discovery takes place, however, a researcher needs to identify the research problems to begin a study. Figuring out the research problem takes considerable time and effort".*

i. What are the sources to generate research problems in Agriculture in your country? [10]

d. Identify one pertinent problem from your area of specialization and use the **cause-and-effect diagram / Ishikawa diagram / Fishbourne diagram** to come up with the root cause(s) [10]

e. You are an Extension Officer in a district of your choice in your country. All the farmers in a certain district are small holder farmers who own 2-5 Ha of land on which they produce crops. Maize is the staple food crop for the people of this district and the farmers are only able to produce a maximum of 8 months' worth of maize each year. There is adequate rainfall in the district for maize production but they still achieve low yields. You need to generate priorities for research to report to the Provincial Research and Extension Committee that covers your district.

i. What is research problem in this district? Define the main issues which you should pay attention to in formulating the research problem. . [10]

ii. What will be the purpose of the study [broad objective(s)] [2]

iii. Develop three specific objectives that you would set out to achieve in this research.[6]

iv. Explain the meaning and significance of a Research design. What design would you choose for your study and why? [12]

v. Describe fully how you are going to do the research in the face of Covid-19 [20]

f. What is the relationship between research Paradigm, Ontology and Epistemology in agriculture [10]

QUESTION 2

a. Discuss the different types of sampling used in agriculture research. [15]

b. Define with example the terms:
   i. Randomization
   ii. Replication
   iii. Experimental Error
   iv. Blocking reliability [15]

c. Review of related literature is the most important part of any research. Discuss and explain how a researcher does a review of related literature and the sources available.[20]

d. Covid-19 pandemic and its effects on Agricultural Research? Discuss. [10]

e. You have been asked to study the effect of three depth of planting (S1=1 inch, S2=2 inches, S3=3 inches) and three methods of cultivation (C1=no till, C2=stubble mulch, C3=offset disk/harrow) on the yield of dryland wheat. You suspect that the effect of the depths of seeding may depend on the method of cultivation. The width of the offset disk is 30 feet which is the same for the harrow. Your project owns a planter that can adjust the depth of seeding and row spacings to match the accepted practice in the dryland area. The maximum width of one pass of this planter is 10 feet. At your experimental site, soil texture is slightly heavier (higher clay content) at one end of the field than at the other. It is inconvenient (but not impossible) to change the depth of planting on the planter. You are weighing the pros and cons of using a split-plot design vs a strip-plot design.

i. Give the field plan diagram for a single block of this experiment using:

a split-plot and a strip plot arrangement of treatments. Include an example of randomization for each of the designs. [20]

ii. Discuss the relative merits of each design in terms of :
a) the power to detect differences among treatments,
b) control of experimental error,
c) ease of statistical analysis and interpretation, and
d) logistic considerations in the field. Indicate which design you would choose and support your decision. [20]

QUESTION 3

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a. What do you mean by research process? Explain its significance in the achievement of sustainable Agriculture in your country. [20]

b. Review of related literature is the most important part of any research. Discuss and explain how a researcher does a review of related literature and the sources available. [20]

c. What is the relationship between research Paradigm, Ontology and Epistemology in agriculture [10]

d. What should be included in a research proposal? Why? Explain with the help of an example in your area of specialization. [30]

e. Explain and illustrate the following research designs:
(a) Two group simple randomized design;
(b) Latin square design;
(c) Random Complete Block Design;
(d) Simple factorial design;
(e) strip plot design [20]