INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

FACULTY OF SCIENCE AND TECHNOLOGY

END OF SEMESTER EXAMINATIONS - AUGUST 2025

PROGRAMME: BSEM
YEAR/SEM: YEAR 2/SEMESTER 2
COURSE CODE: RES2203
NAME: RESEARCH METHODS AND DATA MANAGEMENT

DATE:
TIME:

INSTRUCTIONS TO CANDIDATES:

SECTION A

Answer all questions in this section (compulsory)

Question 1:

CASE STUDY: SOLAR ENERGY ADOPTION IN RURAL UGANDA

A project assesses barriers to solar energy adoption in rural communities of Nakaseke District. Despite high solar potential, adoption remains low. Initial surveys suggest affordability, technical skills, and cultural beliefs as key challenges.

a) Draft a problem statement for this study (6 marks).

b) Develop ONE central research question and TWO sub-questions. (6 marks)

c) Define the target population and justify a sampling technique (e.g., cluster sampling). (6 marks)

d) Design a 5-point Likert scale survey question to measure "perceived affordability." (6 marks)

e) Propose ONE participatory method (e.g., community mapping) to identify cultural barriers. (6 marks)

f) Describe how you would analyze Quantitative data (e.g., descriptive stats, regression). (6 marks)

g) Identify TWO limitations of this research and suggest mitigation strategies. (4 marks)

Question 2:

The Nakivubo Wetland in Kampala, Uganda, is critical for flood control and water purification but faces severe degradation due to urban encroachment, pollution, and agricultural expansion. A research project aims to evaluate the effectiveness of recent conservation policies (2020–2024) on wetland ecological health and community livelihoods.

a) Propose THREE specific research objectives for this study. (6 marks)

b) Justify ONE key research problem arising from wetland degradation in an urban context. (4 marks)

c) Outline FOUR thematic sections for the literature review. (6 marks)

d) Identify TWO theoretical frameworks relevant to analyzing policy effectiveness in wetland management. (4 marks)

e) Specify data types, sampling strategy (e.g., stratified random sampling of water quality sites), and ONE analytical tool (e.g., GIS overlay). (6 marks)

f) Propose a method to capture community perspectives (e.g., focus groups) and justify its relevance. (6 marks)

g) Discuss TWO ethical considerations. (4 marks)

h) Suggest TWO practical recommendations for the Kampala City Council Authority (KCCA). (4 marks)

SECTION B

Attempt only three (3) questions from this section

Question 1:

Compare the roles of *academic journals* and *policy briefs* in communicating research outcomes to different stakeholders.

Question 2:

a) Explain the difference between probability and non-probability sampling. (10 marks)

b) Recommend a sampling strategy for a study on deforestation drivers in Bwindi Impenetrable Forest. (10 marks)

Question 3:

Evaluate the strengths and weaknesses of using questionnaires versus field observations in studying soil erosion. (20 marks)

Question 4:

a) Identify FOUR credible academic databases for environmental science. (8 marks)

b) Discuss strategies to evaluate source credibility. (12 marks)

Question 5:

a) Explain how researcher bias and resource constraints can impact a study on urban air quality. (10 marks)

b) Discuss the roles of academic journals and policy briefs in communicating research outcomes to different stakeholders. (10 marks)

Question 6:

a) Outline the consequences of plagiarism in academic research. (10 marks)

b) Why would a researcher use a sample instead of an entire

population? (10 marks)

Question 7:

a) Outline the key components of a research proposal. (10 marks)

b) Explain the significance of the literature review in a research proposal. (10 marks)

Question 8:

a) Outline the key components of a research proposal. (10 marks)

b) Explain the significance of the literature review in a research proposal. (10 marks)

Question 9:

a) Differentiate between qualitative and quantitative research methods. (10 marks)

b)Define the concept of research and explain its significance in academic and practical contexts. (10 marks)

Question 10:

a) Discuss the advantages and disadvantages of using interviews as a data collection method in research. (10 marks)

b) Discuss the challenges in research and explain how each challenge can be overcome (10 marks)

Question 11:

According to Schumacher (1997), research is a systemic process of collecting, organizing, analyzing and interpreting data to solve a problem and or to generate knowledge. Based on this definition, explain the characteristics of good research. (20 marks)

Question 12:

a) Finding a problem is easy but identifying one that is researchable is difficult. Discuss this statement looking at ways in which this difficulty can be lessened and conditions that a problem must meet in order for

it to be researchable. (10 marks)

b) What are the advantages of using a survey questionnaire as compared to an interview? (10 marks)