INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

FACULTY OF SCIENCE AND TECHNOLOGY

END OF SEMESTER EXAMINATIONS - APRIL 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

Attempt only one question from this section

Question 1:

The Rwenzori Mountains in Uganda have experienced rapid deforestation due to illegal logging, agricultural expansion, and charcoal production. A research team aims to investigate the socio-economic drivers of deforestation and its impact on biodiversity.

1. a) Design a **mixed-methods research approach** for this study. Outline the rationale for combining qualitative and quantitative methods. (10 marks)
2. b) Propose **three hypotheses** related to the drivers of deforestation and biodiversity loss. Justify your choices. (10 marks)
3. c) Identify **four key stakeholders** to involve in this research. Explain how their inclusion would enhance the study's validity. (10 marks)
4. d) Discuss **two ethical challenges** the researchers might face and suggest solutions. (10 marks)

Question 2:

Urban wetlands in Kampala are critical for flood control and water purification but are being degraded by industrial pollution and encroachment. A local NGO wants to assess the effectiveness of existing wetland conservation policies.

1. a) Develop three **research objectives** and **questions** for this study. (10 marks)
2. b) Recommend a **sampling strategy** to collect data from households and industries. Justify your choice. (10 marks)
3. c) Describe **three data collection tools** (e.g., surveys, water quality tests) and explain their relevance. (10 marks)

d) How would you communicate findings to policymakers to advocate for stronger regulations? Outline a strategy. (10 marks)

SECTION B

Attempt only three (3) questions from this section

Question 1:

a) Compare **experimental** and **observational research designs** in environmental studies. (10marks)
b) Which design is more suitable for studying climate change impacts in Uganda? Justify. (10marks)

Question 2:

a) Explain **stratified random sampling** and its advantages. (10marks)
b) How would you apply this method to study soil erosion in a heterogeneous landscape? (10marks)

Question 3:

a) Differentiate between **primary** and **secondary data**. (10marks)
b) Evaluate the reliability of secondary data in Ugandan environmental research. (10marks)

Question 4:

a) Why is **informed consent** critical in community-based environmental research? (10marks)
b) Discuss ethical issues when researching indigenous knowledge on natural resources. (10marks)

Question 5:

a) Define **null hypothesis** and **alternative hypothesis**. (10marks)
b) Formulate hypotheses for a study on plastic pollution in Lake Victoria. (10 marks)

Question 6:

a) Describe **descriptive statistics** and their role in environmental research. (10marks)
b) Use an example to illustrate how **regression analysis** could predict deforestation rates. (10marks)

Question 7:

a) List **five key components** of a research proposal. (10marks)
b) Why is a literature review vital for proposal development? (10marks)

Question 8:

a) What are **focus group discussions**? Highlight their strengths. (10marks)

b) Design a focus group guide to explore farmers' perceptions of drought. (10 marks)

Question 9:

a) Explain **Likert scales** and their application in environmental surveys. (10 marks)

b) Critique the limitations of closed-ended questionnaires. (10marks)

Question 10:

a) How can research findings influence environmental policy in Uganda? (10 marks)

b) Analyze barriers to implementing research-based policies. (10marks)

Question 11:

a) Outline the structure of a research report. (10marks)

b) Why is clarity important when presenting statistical results? (10marks)

Question 12:

a) Identify five **logistical challenges** of carryingout research. (10marks)

b) Propose solutions to address these challenges. (10marks)