



**MACHAKOS UNIVERSITY**  
University Supplementary Examinations for 2021/2022 Academic Year  
**SCHOOL OF ENVIRONMENT AND NATURAL RESOURCE MANAGEMENT**  
**DEPARTMENT OF ENVIRONMENTAL SCIENCES**

**THIRD YEAR SUPPLEMENTARY EXAMINATION FOR THE DEGREES OF  
BACHELOR OF ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION),  
BACHELOR OF ENVIRONMENTAL STUDIES AND COMMUNITY DEVELOPMENT AND  
BACHELOR OF ENVIRONMENTAL SCIENCE**

**ESU 304: RESEARCH METHODS**

**Date:**

**Time:**

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**Instructions: Answer question ONE and any other TWO questions**

**QUESTION ONE (30 Marks)**

- a) Citing relevant examples, explain the following concepts
- i. Sampling design (2 marks)
  - ii. Research design (2 marks)
  - iii. Extraneous variable (2 marks)
  - iv. Experimental group (2 marks)
  - v. Hypothesis (2 marks)
  - vi. Principle of randomization (2 marks)
- b) Explain the key components of a research design (8 marks)
- c) Explain the importance of literature review in the research process (10 marks)

**QUESTION TWO (20 Marks)**

- a) Using examples, explain FIVE different types of research (10 marks)
- b) Using examples, discuss different data collection methods appropriate for research studies in natural resource management (10 marks)

**QUESTION THREE (20 Marks)**

Discuss the ethical considerations that guide the research process.

**QUESTION FOUR (20 Marks)**

As a consultant hired to assess impacts of climate change on agricultural production in your county, discuss the general steps you would adopt in the research process.

**QUESTION FIVE (20 Marks)**

Discuss the data processing and analysis techniques that you would adopt in any given research study.