



MACHAKOS UNIVERSITY

University Examinations For 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION)

BACHELOR OF ENVIRONMENTAL (COMMUNITY DEVELOPMENT)

ESU 304: RESEARCH METHODS

DATE: 18/4/2019

TIME: 2:00 – 4:00 PM

INSTRUCTIONS: Answer question ONE and TWO other questions

QUESTION ONE (COMPULSORY) (30 MARKS)

Michael Sheard, a biologist at Yale University attempted to study whether biological factors contribute to aggressive or violent behaviour by manipulating the biochemistry of a group of prison inmates. Sheard injected a group of prisoners with lithium carbonate, an agent known to enhance serotonin brain activity. Another group of similar prisoners was given a placebo, a drug with no effects. At the end of the study, the aggression behaviour score for the prisoners injected with lithium carbonate showed a large and statistically significant increase.

- a) Explain this type of study design (2 marks)
- b) Explain an hypothesis that can conclude this study (5 marks)
- c) Explain the 'independent' and 'dependent' variables in this study (4 marks)
- d) Explain limitations for this study (6 marks)
- e) What are the potential threats to the validity of this study (8 marks)
- f) Outline the ethical considerations that you would take into account in this study. (5 marks)

QUESTION TWO (20 MARKS)

Differentiate between the following.

- a) Target population and Sample population (4 marks)
- b) Sampling unit and Sampling frame (4 marks)
- c) Correlation and Causal-comparative research (4 marks)
- d) Qualitative and Quantitative data (4 marks)
- e) Stratified and Systematic sampling (4 marks)

QUESTION THREE (20 MARKS)

- a) State the qualities of a good quality research. (5 marks)
- b) Discuss briefly in a systematic order the various components of a research proposal. (15 marks)

QUESTION FOUR (20 MARKS)

You have been sponsored to undertake research on the effects of solid waste on environmental and human health at Dandora dumpsite in Nairobi.

- a) How can you determine whether this research problem/topic is an important one? (4 marks)
- b) Why do you think it is important to review literature for this study? (4 marks)
- c) What factors will you consider to arrive at a truly representative sample size? (4 marks)
- d) How would you ensure that the subjects will participate fully in this study? (4 marks)
- e) Explain briefly how you will sample the respondents. (4 marks)

QUESTION FIVE (20 MARKS)

Data comes in various sizes and shapes. Discuss the measurement and scaling techniques used in research.