

CHUKA



UNIVERSITY

COLLEGE

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
MASTER OF SCIENCE (ENVIRONMENTAL SCIENCE)**

ENSC 703: RESEARCH METHODS I

STREAMS: M.SC (ENSC) Y1S1

TIME: 3 HOURS

DAY/DATE: TUESDAY 13/12/2012

2.30 P.M– 5.30 P.M

INSTRUCTIONS:

Answer all questions in Section A and choose two questions in Section B.

Section A: Compulsory Question

1. (i) Discuss the three main principles of experimental design and their importance in experimentation. [9 marks]
- (ii) Under what circumstances would you use stratified random sampling? Explain using an example. [5 marks]
- (iii) Inductivism and Deductivism are two major approaches that have influenced research method. Define them briefly highlighting their differences. [6 marks]

Section B: Answer 2 questions.

2. Defining a research problem properly and clearly is an important step of research study. Discuss the process of defining a research problem. [20 marks]
3. You have successfully identified a problem and want to design and experiment to answer our question. Discuss the process you would need to follow to see your project to completion. [20 marks]
4. (i) You wish to investigate effects of 4 different levels of fertilizer on yield of 3 crop varieties. You expect that the varieties will behave differently. The following options are considered:
 - (1) Do three (3) separate experiments one for each variety.

- (2) Carry out a complete factorial experiment
- (3) Randomized complete block design
- (4) Use Latin square design

Discuss the advantages and disadvantages of each plan and what option you would take and why. [12 marks]

- (ii) In the process of choosing an appropriate experimental design one has to clearly define and identify:

- (1) Experimental and control groups
- (2) Extraneous variables
- (3) Confounded relationship

Discuss their importance in research design. [8 marks]

- 5. (i) Scientific method separates science from other forms of seeking knowledge. Discuss briefly. [10 marks]

- (ii) Science has been observed to develop over time in a certain sequence, so called the “paradigm theory” of research. Discuss the “paradigm theory” and its influence on scientific method. [10 marks]

- 6. Discuss the structure of a research proposal. [20 marks]
