



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF SPATIAL PLANNING AND NATURAL RESOURCE MANAGEMENT
UNIVERSITY EXAMINATION FOR DEGREE OF MASTER OF SCIENCE IN URBAN
ENVIRONMENTAL PLANING AND MANAGEMENT
1ST YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR**

MAIN

COURSE CODE: APP 802

COURSE TITLE: QUANTITATIVE TECHNIQUES

EXAM VENUE: GIS LAB

STREAM: (MA Spatial Planning)

DATE: 14/04/14

EXAM SESSION: 2.00 – 5.00 PM

TIME: 3.00 HOURS

Instructions:

- 1. Answer question 1(Compulsory) and ANY other 2 questions**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

Question One

The weight (in pounds) for a population of school-aged children is normally distributed with a mean equal to 135 ± 20 pounds ($m \pm s$). Suppose we select a sample of 100 children ($n = 100$) to test whether children in this population are gaining weight at a .05 level of significance.

- a. What are the null and alternative hypotheses? (5 marks)
- b. What is the critical value for this test? (5 marks)
- c. What is the mean of the sampling distribution? (5 marks)
- d. What is the standard error of the mean for the sampling distribution? (5 marks)

Question Two

- a) A researcher conducts a survey using a sample of 30 participants, tests hypothesis and makes the decision to retain the null hypothesis. Another researcher conducts the same study testing the same hypothesis with a sample of 300 participants and makes the decision to reject the null hypothesis. Give a likely explanation why the two samples led to different decisions. (10 marks)
- b) Define power and identify six factors that influence power. (10 marks)

Question Three

- a) Discuss the main difference between a linear regression and correlation analysis? (5 marks)
- b) How do we interpret the strength and direction between two variables in a simple linear regression and correlation analysis? (5 marks)
- c) Explain the importance of the goodness of fit test in a simple linear regression analysis. (5 marks)
- d) Give a hypothetical example that can be solved by means of a simple linear regression and correlation analysis. (5 marks)

Question Four

- a) Discuss the data type requirements for an ANOVA analysis? (3 marks)
- b) When do we use ANOVA? (2 marks)
- c) Discuss the weakness of ANOVA? (3 marks)
- d) To address the weakness of ANOVA, which tests do we run in a simple one way analysis? What is the condition of running such tests? (4 marks)
- e) Give a hypothetical example that can be solved by ANOVA. Identify the independent and dependent variables. (8 marks)

Question Five

- a) Explain what you understand by cluster analysis. (5 marks)
- b) With the help of appropriate diagrams, discuss the linkage methods in cluster analysis. (5 marks)
- c) Discuss the importance of using hierarchical and nonhierarchical methods in tandem in cluster analysis. (5 marks)
- d) Discuss the ways in which the reliability and validity of a cluster analysis can be verified (5 marks)