JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF MATHEMATICS AND ACTUARIAL SCIENCE

UNIVERSITY EXAMINATION FOR DEGREE OF MASTER OF   SCIENCE APPLIED STATISTICS

2023/2024

REGULAR (MAIN)

COURSE CODE: SAS 889

COURSE TITLE: <u>RESEARCH METHODOLOGY</u>

EXAM VENUE: **STREAM: (MSc. Actuarial)**

DATE: **EXAM SESSION:**

TIME: 3.00 HOURS

<u>**Instructions:**</u>

1. **Answer question ANY 3 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 1[20 Marks]

a. A good research objective has fundamental characteristics. State and explain any Three

[6 Marks]

b. Suppose one is about to write a research proposal to complete the Msc. Applied statistics course. The proposal must follow the requirements for a scientific research. Outline and discus the criteria one would need to follow for the research to be considered a 'good research'. [14 Marks]

Question 2 [20 Marks]

a. Explain in detail the purpose of literature review in proposal writing and further discuss

the three main sources of information for literature reviews [10 Marks]

b. Discuss five key elements that you would incorporate in the Methodology chapter for applied statistics research proposal. [10 Marks]

Question 3[20 Marks]

a. List and discuss in detail the components of scientific research that one would include in the first chapter of a research proposal [15 Marks]

b. A survey targets a finite population of 15,000 individuals. The population can be stratified into three distinct groups. The groups are made up of 6,000, 4000, and 5,000 individuals each. The groups are observed to have unique within variability. The standard deviations for the three groups are 40, 19 and 14 respectively. The survey desires a sample size of 50. Obtain the strata sizes for this survey based on optimum allocation. [5 marks]

Question 4[20 Marks]

a. An abstract is a key feature of a research proposal or final research report. Discuss all the elements to be considered when one is writing a research abstract. [10 marks]
b. Discuss the need for a research design and give the features that would define a good research design. [10 marks]

Question 5[20 Marks]

a.   Climate change is a current theme in the global stage. Nearly every country in the world and international organizations are having a discussion on climate change and its impact

now and in the future. There are existing models and new models that are being built to try and portray what climate change portends for the globe.

Based on the above passage come up with;

i.   A possible research topic

ii. A possible Statement of the problem

iii. Possible research Hypothesis

iv. Possible research objectives

v.   Possible research scope

vi. Possible statistical tools for methodology   [20 Marks]