



**STRATHMORE INSTITUTE OF MATHEMATICAL SCIENCES**  
**MASTERS OF SCIENCE IN STATISTICAL SCIENCES**  
**END OF SEMESTER EXAMINATION**  
**STA 8402 RESEARCH METHODS**

**Date:** Wednesday 13th December 2023

**Time:** 5:00 – 7:00 pm

- 1. You are required to answer three questions.**
- 2. Answer Question One and any other two questions.**

**Question One [Compulsory]**

- a) Describe the term scientific research. **(2 marks)**
- b) Provide three purposes of a problem statement. **(3 marks)**
- c) Define research methods and methodology while giving difference between them? **(6 marks)**
- d) Describe what constitutes a successful research proposal. **(3 marks)**
- e) Provide 6 purposes of literature review. **(6 marks)**
- f) Describe three aspects that constitute a Good Research Statement? **(6 marks)**
- g) Distinguish between applied research and pure research. **(4 marks)**

**Question Two [Optional]**

Provide the basic steps of the scientific method that leads to a scientific paper.

**(15 marks)**

**Question Three [Optional]**

Clearly distinguish the following

- a. Observational study and cross-sectional study
- b. Experimental study and mathematical modeling
- c. Qualitative and quantitative research
- d. Statistic and Parameter

**(15 marks)**

**Question Four [Optional]**

Describe the following components of a dissertation together with their key tenets.

- i. Abstract
- ii. Introduction
- iii. Literature review
- iv. Results
- v. Discussions

**(15 marks)**

**Question Five [Optional]**

- a) Outline ethical rules that should be considered when conducting research.
- b) Describe 5 purposes of the Method section in empirical research?
- c) Describe three common Non-Textual Elements in the results section.

**(15 marks)**