NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCE

DEPARTMENT OF ENVIRONMENTAL SCIENCE

MASTER OF SCIENCE IN CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT

APPLICATION OF GEOSPATIAL TECHNIQUES TO CLIMATE CHANGE

ECS 6102

Final Examination Paper

October 2024

This xamination Paper consists of 2 pages

Time Allowed:	3 hours
Total Marks:	100
Special Requirements:	Nil
Internal Examiner:	Ms Z. Dzinotizei

INSTRUCTIONS

1. Answer **QUESTION ONE** and any **THREE** others
2. Each question carries 25 marks

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	25
3.	25
4.	25
5.	25
6.	25
TOTAL	**100**

1. (a) Describe and explain the dynamics between climate change and natural hazard incidences. **[8 Marks]**
   (b) Explain the utility of geospatial methods in natural hazard risk mapping. **[17 Marks]**

2. (a) With the aid of examples, describe climate-induced changes on the cryosphere. **[10 Marks]**
   (b) Evaluate the efficacy of optical and radar remote sensors in monitoring the state of the earth's ice sheets. **[15 Marks]**

3. a) Discuss the role of carbon credit markets in limiting mean global temperature rise to below 1.5°C according to the Paris Agreement. **[15 Marks]**

   b) Evaluate the utility of remote sensing technology in ensuring transparent evaluation of the quality of carbon offsets. **[10 Marks]**

4. Describe and explain the importance of land use land cover maps in climate change studies.

5. (a) With reference to a case study, explain the role of climate change in desertification of semi-arid ecosystems. **[10 Marks]**
   (b) Discuss the role of GIS and remote sensing in climate change mitigation in semi-arid ecosystems. **[15 Marks]**

6. a) Distinguish between regional and global climate change models. **[10 Marks]**

   b) Discuss the strengths and limitations of climate change modelling. **[15 Marks]**