



ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF SCIENCE, TECHNOLOGY, AGRICULTURE AND FOOD SYSTEMS DEVELOPMENT

DEPARTMENT OF INFORMATION SYSTEMS

EXAMINATION PAPER

DIPLOMA IN GEOGRAPHICAL INFORMATION SYSTEM

COURSE CODE : GISRS213
COURSE TITLE : GIS and RS applications
SPECIAL REQUIREMENTS : None
DURATION : 2 Hours
LEVEL : 2.1
DATE : 2024

27 NOV 2024

INSTRUCTIONS TO CANDIDATES:

1. Section A: Question 1 is compulsory (40 marks).

2. Section B: Answer any 3 questions from Questions 2 to 6 (20 marks each).

Overall Total Marks: 100 Marks

ADDITIONAL MATERIALS

- *Answer Booklet.*

Section A: Compulsory Question (40 Marks)

Question 1:

Discuss the significance of Remote Sensing (RS) in environmental management in Southern Africa. Your discussion should cover the following aspects:

a. Introduction to Remote Sensing and its role in GIS.

[15 marks]

b. Major applications of Remote Sensing in monitoring natural resources, land cover, and climate in Southern Africa.

[10 marks]

c. The advantages and challenges of using Remote Sensing in environmental monitoring. [10 marks]

d. Provide examples of successful RS applications in Southern Africa.

[5 marks]

Section B: Optional Questions (Answer Any 3; Each Question Carries 20 Marks)

Question 2

a. Explain the role of Remote Sensing in agriculture management. Provide an overview of how RS technology assists in monitoring agricultural conditions.

[6 Marks]

b. Describe specific techniques used in Remote Sensing to monitor crop health in Southern Africa. Include examples of vegetation indices like NDVI (Normalized Difference Vegetation Index). [8 Marks]

c. Discuss how soil conditions and water availability are assessed using Remote

Sensing data, with examples relevant to Southern Africa.

[6 Marks]

Question 3

a. Define the role of GIS and Remote Sensing in disaster management. Highlight the main phases of disaster management where these technologies are critical.

[6 Marks]

b. Explain how Remote Sensing is used for disaster preparedness and response in Southern Africa. Provide examples of specific disasters.

[8 Marks]

c. Discuss the application of GIS in post-disaster recovery efforts in Southern Africa, with a focus on spatial data analysis and decision-making.

[6 Marks]

Question 4

a. Outline the steps involved in acquiring Remote Sensing data for forest management. Include considerations like sensor selection and data processing.

[6 Marks]

b. Describe the types of sensors and satellite imagery commonly used for forest monitoring in Southern Africa. Provide examples of specific missions or satellites.

[8 Marks]

c. Discuss the key considerations for effective forest monitoring using Remote Sensing, focusing on data accuracy, resolution, and environmental factors.

[6 Marks]

Question 5

a. Explain how GIS and Remote Sensing are integrated for hydrological studies. Highlight the importance of these technologies in understanding water systems.

[6 Marks]

b. Describe the methods used to map water resources and assess water quality using Remote Sensing in Southern Africa.

[8 Marks]

c. Discuss the role of GIS in managing catchment areas, including the use of spatial data for water resource planning.

[6 Marks]

Question 6

a. Identify common challenges faced when using Remote Sensing data in Southern Africa, such as data accessibility and environmental factors.

[6 Marks]

b. Discuss the resolution issues that arise with Remote Sensing data, and how they affect the quality of analysis.

[8 Marks]

c. Suggest solutions to overcome these challenges and improve the effectiveness of Remote Sensing for spatial analysis in Southern Africa.

[6 Marks]

****END OF EXAMINATION****