THE STATE UNIVERSITY OF ZANZIBAR

SCHOOL OF NATURAL AND SOCIAL SCIENCE

DEPARTMENT OF SOCIAL SCIENCE

FINAL EXAMINATION

BACHELOR OF GEOGRAPHY, AND ENVIRONMENTAL STUDIES & BACHELOR OF SCIENCE WITH EDUCATION

SEMESTER II

GEOGRAPHICAL INFORMATION SYSTEM – GE 2218

Date: 20- 07- 2023 **Time: 09:00 AM – 12:00 PM**

INSTRUCTIONS

1. This paper consists of **TWO** sections, **A** and **B**, which carries 24 and 36 marks respectively.
2. Answer all questions from section A, and any THREE questions from section B.
3. Cellular phones and any other unauthorized materials are NOT allowed in the examination room.
4. **ANSWER EACH QUESTION ON SEPERATE SHEET**
5. This exam consists of five (5) printed pages, including cover page

SECTION A (24 marks)

Answer all questions

1. For each of the item i – viii, choose the correct answer(s) among the given alternatives and write its letter beside the item number [8 marks]

i. In spatial data quality, the correctness of the data location and content is

A. Completeness B. Consistency C. Precision D. Accuracy

ii. What is NOT characteristic of discrete objects?

A. They may include points, lines, and areas
B. They can overlap
C. They completely cover the space
D. They can be counted

iii. GIS captures and analyze

A. Air temperature
B. Barometric pressure
C. Elevation
D. All of the above

iv. Key components of 'spatial data' quality include

A. Positional accuracy
B. Logical consistency
C. Multiuser accessibility
D. All of the above

v. The 'boundary model' is sometimes also called

A. Topological data model
B. Temporal data model
C. Topological discrete model
D. Temporal discrete model

vi. A GIS package cannot be called full-fledged if the following capabilities are missing

A. Data Capture and Preparation
B. Data storage and analysis
C. Presentation of spatial data
D. All of the above

vii. The raster data model is based on which of the following?

A. Discrete XY coordinates pairs
B. Grid cells
C. Pixels grouped to form spatial entities
D. B & C

viii. Which is NOT characteristic of discrete objects?

A. They may include points, lines, and areas
B. They can overlap
C. They completely cover the space
D. They can be counted

2. Write TRUE or FALSE for the following Statements [8 marks]

i. The attribute information for vector data are stored in pixel.

ii. Geocentric Coordinate System is also known as 3D Cartesian coordinate system.

iii. All GIS platforms let you view vector and raster data sources together.

iv. Map elements that provide little contrast are easily lost in the overall visualization.

v. UTM is useless at the poles due to high distortion.

vi. A small-scale map shows a small geographic area.

vii. The projected coordinate system transforms geographical data from 2D to 3D.

viii. At least 3 satellites are required to obtain a 3D GPS-based position.

3. a. What do you understand by the term participatory mapping? [2 marks]

b. Mention two (2) tools that are used for participatory mapping [2 marks]

c. Put the steps of participation ladder into the right order [4 marks]

i. inhabitants are informed on decisions

ii. decisions are made together

iii. inhabitants make decisions

iv. inhabitants are asked their opinions

SECTION B (36 marks)

Answer any THREE questions, each question carries 12 marks.

4. a. What is the metadata? Explain how the metadata is used to reduce the uncertainty, and the impact that may have with respect to the legal implications of GIS-based decisions making. [4 marks]

   b. What vector type best represents the following features: state boundaries, telephone poles, buildings, cities, stream networks, mountain peaks, soil types, flight tracks? [4 marks]

   c. Why primary data are more preferred than secondary data in Geospatial analysis? [4 marks]

5. a. Why do we project the Earth Surface to flat? [3 marks]

   b. What is the challenge behind the Earth projection? [4 marks]

   c. With examples, clarify the statement that "the rapid increment of GIS is its potential use in a wide array of applications" [5 marks]

6. a. In GIS perspective, data modelling meaning to describe reality. Briefly describe. [4 marks]

   b. Mention and explain two fundamental data model in GIS. [4 marks]

   c. What vector type best represents the following features: state boundaries, telephone poles, buildings, cities, stream networks, mountain peaks, soil types, flight tracks? [4 marks]

7. The Revolutionary Government of Zanzibar has setup the MALARIA project which aims at fight against MALARIA fever, and Shehia of Kikwajuni has been selected as the pilot area. You are hired as Geo-Edu experts in the project, and your assignment is to conduct spatial analysis to identify the potential breeding locations for Malaria mosquitoes. [3 marks]

   a. What are the potential spatial datasets for your assignment? [4 marks]

   b. Which data model format is best for each of the dataset identified in (7a) above? [4 marks]

   c. Explain the importance of each of the datasets in your assignment [4 marks]

8. a. On-screen digitization need georeferencing of scanned image. Briefly explain the concept of geo-referencing? [4 marks]

b. Briefly describe the GPS segments. [4 marks]

c. Briefly describe how the GPS works? [4 marks]