THE STATE UNIVERSITY OF ZANZIBAR

SCHOOL OF COMPUTING, COMMUNICATION AND MEDIA

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

FINAL EXAMINATION

SEMESTER I

GEOGRAPHICAL INFORMATION SYSTEM – CS/INF 2111

Date: 25- 02- 2022 **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 four (4) 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. GIS applications are _____ tools

A. Mobile B. Computer C. Machinery D. None of the above

ii. Which of the following can be used for representing a real world feature on two dimensional surfaces?

A. Plan B. Drawing C. Scale D. Map

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. 'Spatial databases' are also known as

A. Geodatabases B. Relational databases

C. Concurrent databases D. None of the above

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. GIS represents a location in _____ dimensional coordinates

A. 2 B. 3 C. 4 D. 5

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

A. Grid cells B. Discrete XY coordinates pairs

C. A & D D. Pixels grouped to form spatial entities.

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

i. Nominal and Interval data values are referred to as 'qualitative data'

ii. Data cannot be shared in the process of GIS

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 there.

vi. Images are not georeferenced.

vii. A DBMS is a declaration query language and supports the use of a data model.

viii. Reality can be represented in GIS as a series of layers or as objects

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

i. Have a natural zero value	A. Trilateration
ii. Classify household income as 'low', 'average' or 'high'	B. Silver polygons
iii. Do not support multiplication or division	C. Gaps between polygons
iv. Global Positioning Service (GPS) is based on a principle called	D. Concurrent database
v. Topology error	E. Geographic fields
vi. Spatial Data Infrastructure	F. SID
vii. 'Spatial databases' are also known as	G. Interval Data Values
viii. Air temperature and barometric pressure	H. Geospatial database
	I. Ratio Data Values
	J. Ordinal Data Values

SECTION B (36 marks)

Answer any THREE questions, each question carries 12 marks.

4. a. Where do you live? [1 marks]

   b. Briefly describe the spatial data model of your route to University. [3 marks]

   c. Mention four attributes that might be used to describe spatial data you mentioned on (2b)? [4 marks]

   d. What measurement scales would be suitable for the attributes that you would use to describe the spatial objects that you have mentioned on (2b)? [4 marks]

5. a. Why do we project the Earth Surface to flat? [2 marks]

   b. What is the challenge behind the Earth surface projection? [3 marks]

   c. Briefly describe how the GPS works? [3 marks]

   d. With examples, clarify the statement that "the rapid increment of GIS is its potential use in a wide array of applications" [4 marks]

6. a. What does spatial data quality mean? [2 marks]

   b. With examples clearly describe data consistent in terms of space, time and data content as applied in geospatial data quality. [6 marks]

   c. What is the quality of dataset in terms of comprehensiveness? [2 marks]

   d. Differentiate between accuracy and precision as the component of geospatial data quality. [2 marks]

7. a. Briefly explain the concept of geo-referencing? [2 marks]

   b. Mention at least 6 Geo-visualization tools. [3 marks]

   c. What is the most important consideration when designing a map? [2 marks]

   d. Identify and explain five functional elements of GIS [5 marks]