



THE STATE UNIVERSITY OF ZANZIBAR
SCHOOL OF COMPUTING, COMMUNICATION AND MEDIA
DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
FINAL EXAMINATION

SEMESTER I

INTRODUCTION TO GEOGRAPHICAL INFORMATION SYSTEM – INF 2111

Date: 24- 02- 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 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 among the given alternatives and write its letter beside the item number [8 marks]

- i. The information in GIS is entered and stored as
 - A. Panels
 - B. Layers
 - C. Single panel
 - D. Dual panel
- 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. Which of the following acts a benefit of GIS?
 - A. Maintaining geo spatial data
 - B. Spatial data sharing
 - C. Accurate data information
 - D. Presence of data retrieval service
- iv. The 'boundary model' is sometimes also called
 - A. Topological data model
 - B. Temporal data model
 - C. Topological discrete model
 - D. Temporal discrete model
- v. Among the following, which doesn't come under the components of GIS?
 - A. Hardware
 - B. Software
 - C. Compiler
 - D. Data
- vi. GIS represents a location in _____ dimensional coordinates
 - A. 2
 - B. 3
 - C. 4
 - D. 5
- vii. What are the two general data formats used in GIS?
 - A. Point and Line
 - B. Spatial and Attribute
 - C. Raster and Vector
 - D. Analog and Digital
- viii. GIS applications are _____ tools
 - A. Mobile
 - B. Computer
 - C. Machinery
 - D. None of the above

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. Discrete fields divide the study space in mutually exclusive, bounded parts, with all locations in one part having the same field value.
- iv. Map elements that provide little contrast are easily lost in the overall visualization.
- v. Vector feature data do not have to be stored with "topology."
- vi. Images are not georeferenced.
- vii. GPS requires use of three satellites for an earth surface fix
- 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. Accuracy	A. Trilateration
ii. 'Spatial databases' are also known as	B. Silver polygons
iii. Precision	C. Gaps between polygons
iv. Mercator projection	D. Concurrent database
v. Topology error	E. Geographic fields
vi. GLONASS	F. Distance distortion
vii. Air temperature and barometric pressure	G. Measure how far each value in the dataset is from the mean
viii. Ratio data values	H. Geospatial database
	I. Have a natural zero value
	J. Area distortion
	K. GPS navigation operated by China
	L. GPS navigation operated by Russia
	M. Closeness of observations to the true values

SECTION B (36 marks)

Answer any THREE questions, each question carries 12 marks.

4. a. What is the digitizing process? [4 marks]
b. Before starting the on-screen digitization in the spatial data input, the scanned image must be georeferenced. Briefly explain the concept of geo-referencing? [4 marks]
c. What do we consider when the hardcopy maps are used as spatial data source? [4 marks]
5. a. Why is an Earth Surface is projected to flat? [4 marks]
b. What is the challenge behind the Earth projection? [4 marks]
c. GIS describe an object in two interrelated ways, with examples discuss it. [4 marks]
6. a. Why map is a model? Briefly discuss. [3 marks]
b. With the examples discuss the main domain of spatial data quality. [6 marks]
c. Vector data model uses discrete elements to represent the geometry of real world entities. Briefly describe the types of vector data model. [3 marks]
7. a. Mention at least 6 Geo-visualization tools. [3 marks]
b. What is the most important consideration when designing a map? [4 marks]
c. Identify and explain five functional elements of GIS [5 marks]
8. a. Why primary data are more preferred than secondary data? [4 marks]
b. With examples, explain 4 types of spatial variables measurement scales? [4 marks]
c. Briefly describe how the GPS works? [4 marks]