

NATIONAL UNIVERSITY OF LESOTHO
B.A & B.Sc. SUPPLEMENTARY EXAMINATIONS
ES 3411/GES 3475: GEOGRAPHIC INFORMATION SYSTEMS (GIS)

August 2023

MARKS: 100

TIME: 3 HOURS

Instruction: Answer any four questions. Where appropriate illustrate your answers with sketches or diagrams.

Question 1

Write short notes on the following methods of classifying data

- a) Natural breaks (8)
- b) Quantile breaks (8)
- c) Equal interval (8)

Question 2

Outline and discuss how the GPS works (25)

Question 3

- a) What is topology (3)
- b) Discuss the nature of topological vector data structure (12)
- c) Write short notes on the importance of enforcing topology in GIS (10)

Question 4

- a) Briefly outline reasons for compressing raster data (5)
 - b) Discuss the following methods of compressing data
 - i. Quadtrees (10)
 - ii. Block codes (10)
- [25]

Question 5

Describe, with examples five key differences between the vector data and the raster data models (25)

Question 6

Write short notes on the following components of a GIS software

- a) Spatial and attribute database (5)
 - b) Map digitizing systems (5)
 - c) Database Management System (DBMS) (5)
 - d) Geographic analysis system (5)
 - e) Decision support system (5)
- [25]