



UNIVERSITY EXAMINATIONS

SECOND SEMESTER 2023/2024 ACADEMIC YEAR

**THIRD YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN (GEOGRAPHY)**

GEOG 324: GEOGRAPHIC INFORMATION SYSTEMS II

STREAM: R

TIME: 2 HRS

DAY: TUESDAY [11.30 A.M – 1.30P.M] DATE: 09/04/2024

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

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INSTRUCTIONS TO CANDIDATES

- i) Answer **QUESTION ONE** and **ANY OTHER TWO** Questions.
- ii) Maps, sketches, diagrams and examples should be used where they serve to illustrate the answers.

QUESTION ONE (Compulsory)

- a) The attribute table below is extracted from a named data layer in a GIS database. Use it to answer the below questions.

Nakuru_Towns							
	FID	Shape *	AREA	PERIMETER	TOWN_NAME	TOWN_ID	TOWN_TYPE
▶	0	Point	0	0	Mau Summit	4	Market Centres
	1	Point	0	0	East Mau	4	Market Centres
	2	Point	0	0	Lanet	4	Market Centres

- i) Name the layer (1 mark)
 - ii) Giving names, state at any **TWO** features represented in the database (2 Marks)
 - iii) List any **THREE** characteristics for the displayed features (3 Marks)
 - iv) Describe the GIS Database model used to represent the above data (4 Marks)
- b) Discuss supervised Land-Use Land-Cover (LULC) classification in GIS (10 Marks)
- c) Giving examples, explain the broad classification of GIS software (10 Marks)

QUESTION TWO (20 MARKS)

- a) Describe the following data types as defined for an attribute table structuring in GIS
- i) Float (2 Marks)
 - ii) Short integer (2 Marks)
 - iii) Long integer (2 Marks)
 - iv) Text (2 Marks)
 - v) Date (2 Marks)
- b) Examine any **FIVE** components of a GIS project (10 Marks)

QUESTION THREE (20 MARKS)

Differentiate between the following as used in GIS:

- i) Metadata and attribute data (4 Marks)
- ii) Raster data and vector data (4 Marks)

- iii) Data layers and a project (4 Marks)
- iv) Data frame and layout frame (4 Marks)
- v) 'Save project' and 'Save Project As' (4 Marks)

QUESTION FOUR (20 MARKS)

Define and explain the following functionalities of a GIS software:

- i) Data editing (4 Marks)
- ii) Interoperability (4 Marks)
- iii) Data management (4 Marks)
- iv) Data analysis (4 Marks)
- v) Visualization (4 Marks)

QUESTION FIVE (20 MARKS)

Assume that you are a GIS analyst and would like to design a computer geodatabase in ArcCatalog. The database will comprise of the following datasets: rivers, lakes, roads, plantations, man-holes, forests, Landsat image, fire-assembly points and IKONOS satellite. From the task at hand, answer the below questions.

- i) Explain the **TWO** broad categories of data you would have for the datasets given. Give **ONE** example in each case (6 Marks)
- ii) Design how the data would be structured in GIS ArcCatalog to make an efficient geodatabase (14 Marks)

