



UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

**THIRD YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF EDUCATION (SCIENCE/ARTS)**

GEOG - 319: GEOGRAPHIC INFORMATION SYSTEM

STREAM: BEd (SCIENCE/ARTS)

TIME: 2 HRS

DAY: TUESDAY [11.30 – 13.30 P.M]

DATE: 27/01/2026

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

INSTRUCTIONS:

- i. Answer question **ONE** and any **OTHER TWO** questions.
- ii. Do not write on this question paper.
- iii. Examples, diagrams and sketch maps may be used whenever they serve to illustrate an answer

QUESTION ONE (30 MARKS)

- a) Write short notes explaining the following as used in Geographic Information System (GIS)
- i) Geo-database (2 Marks)
 - ii) Stand-alone computer (2 Marks)
 - iii) GIS layers (2 Marks)
 - iv) Meta-data (2 Marks)
 - v) On-screen digitizing (2 Marks)
 - vi) Overshoot (2 Marks)
- b) Giving relevant example in each case, describe the **two** (2) classifications of GIS software in the market today (8 Marks)
- c) Define raster data model and using appropriate sketches, explain how the three categories of geographic data types characterized by their geometry can be represented in a raster GIS (10 Marks)

QUESTION TWO (20 MARKS)

Examine any **TEN** (10) functionalities of a GIS software (20 Marks)

QUESTION THREE (20 MARKS)

Differentiate between the following terms and phrases as used in GIS:

- i) Spaghetti data and topological data (4 Marks)
- ii) Pirated software and proprietary GIS software (4 Marks)
- iii) GIS analysis and GIS visualization (4 Marks)
- iv) GIS data interoperability and GIS data editing (4 Marks)
- v) Database and Data-Base Management System (DBMS) (4 Marks)

QUESTION FOUR (20 MARKS)

Assume that you have been tasked with the responsibility of starting a geographic information system in your institution and you are required to convince prospective donors of the importance of such a system. Making reference to the task ahead, answer the following questions:

- a) Elaborate any **ten** (10) tasks which GIS is meant to accomplish **(10 Marks)**
- b) Discuss any **ten** (10) data sources for spatial GIS data **(10 Marks)**

QUESTION FIVE (20 MARKS)

- a) Examine any two GIS analyses which can be applied in the management of each of the following natural resources:
 - i) Forest **(5 Marks)**
 - ii) Rivers **(5 Marks)**
- b) Discuss any **Five** (5) constraints of using GIS in Kenyan context **(10 Marks)**