



UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

**FIRST YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN GEOGRAPHY**

GEOG 113: INTRODUCTION TO QUANTITATIVE ANALYSIS

STREAM: R

TIME: 2 HRS

DAY: TUESDAY [8.30 – 10.30 A.M]

DATE: 03/02/2026

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

Section A: Answer ALL questions (30 MARKS)**QUESTION ONE (30 MARKS)**

a) Using appropriate examples or illustrations, differentiate between the following terms as used in quantitative analysis:

i) Population and sample **(4 Marks)**

ii) Ordinal and ratio scale **(4 Marks)**

iii) Skewedness and kurtosis **(4 Marks)**

b) Briefly explain the advantages of the median and mode over the arithmetic mean **(4 Marks)**

c) A researcher recorded the monthly rainfall (mm) for 36 stations within a river basin. The data following were collected:

12, 18, 25, 30, 33, 40, 42, 44, 47, 50, 52, 55, 57, 60, 61, 63, 65, 68, 70, 72, 73, 75, 78, 80, 82, 83, 85, 88, 90, 92, 95, 97, 100, 103, 105, 108.

Use the data to perform the following:

i) Prepare a frequency distribution table (hint use Sturges Formula) **(10 Marks)**

ii) Using the frequency distribution, draw a histogram **(2 Marks)**

iii) On the same axes, draw a frequency polygon **(2 Marks)**

SECTION B: ANSWER ANY TWO QUESTIONS**QUESTIONS TWO (20 MARKS)**

A geographer is conducting a regional economic analysis and needs to calculate the average household income across four counties in Kenya. The tabulated data has been collected. Use it to answer questions below.

County	Average Household Income (KES)	Number of Households
Nyeri	45,000	1,200
Laikipia	62,000	800
Narok	38,000	1,500
Nakuru	55,000	500

a) Calculate the weighted arithmetic mean of household income for the entire region **(8 Marks)**

- b) Calculate the simple arithmetic mean (un-weighted average) of household income **(4 Marks)**
- c) Compare the results from parts (a) and (b) above and explain why they differ, and explain the measure which is more appropriate for this geographical analysis. Justify your answer **(8 Marks)**

QUESTIONS THREE (20 MARKS)

A forester is analyzing the height of 20 trees in a forest reserve. The data has been grouped into the tabulated frequency distribution.

Tree Height (meters)	Number of trees
5 - 10	3
10 – 15	6
15 – 20	8
20 – 25	2
25 – 30	1

Using the data:

- i) Identify the modal class, and calculate the mode of tree heights **(10 Marks)**
- ii) Calculate the median of tree heights **(10 Marks)**

QUESTIONS FOUR (20 MARKS)

A demographer wants to study the distribution of household types and population density in different neighborhoods of a town with 100,000 residents.

- a) Describe two probability and non- probability sampling methods that could be used to select households across the neighborhoods **(16 Marks)**
- b) Highlight one limitation and advantage of each the methods discussed **(4 Marks)**

QUESTIONS FIVE (20 MARKS)

A researcher is conducting a field study to investigate population distribution, household sizes, and services in different wards of their sub-county.

- a) Describe the key steps the researcher should take in preparing for this fieldwork, highlighting the planning, tools and data collection methods **(10 Marks)**
- b) Explaining the purpose of each, outline the main sections that should be included in the fieldwork report **(10 Marks)**