

## UNIVERSITY EXAMINATIONS

**1<sup>ST</sup> SEMESTER 2022/2023 ACADEMIC YEAR**

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

**GEOG 113: INTRODUCTION TO QUANTITATIVE METHODS**

***STREAM: R***

***TIME: 2 HRS***

***DAY: FRIDAY [8.30AM – 10.30AM] DATE: 09/12/2022***

**THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES**

**PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.**

**INSTRUCTIONS: - Answer Question ONE and any other two questions.**

**Sketch maps and diagrams should be used whenever they serve to illustrate an answer.**

### QUESTION ONE

- (a) Define quantitative geography and show its areas of concern. (6 Marks)
- (b) Differentiate between primary and secondary data. (4 Marks)
- (c) Explain experimental research design and show its strengths in geography. (10 Marks)
- (d) Discuss the advantages of statistics in geography. (10 Marks)

### QUESTION TWO

- (a) Define the following terms:
  - (i) Independent variables (2 Marks)
  - (ii) Dependent variables (2 Marks)
  - (iii) Hypothesis (2 Marks)
- (b) The following table present a frequency distribution of education level by gender in a sampled population.

| Education Level     | Male | Female |
|---------------------|------|--------|
| Less than Secondary | 46   | 67     |
| Secondary           | 151  | 214    |
| Middle level        | 24   | 37     |
| Bachelor Level      | 65   | 81     |
| Postgraduate        | 43   | 49     |
| Total               | 329  | 448    |

- (i) Calculate the percentages for both males and females. (6 Marks)
- (ii) What percentage of males has continued their education beyond high school? What is the comparison with females? (4 Marks)
- (iii) What is the possible hypothesis on the relationship observed in the data above? (4 marks)

### QUESTION THREE

- a) Define measures of central tendency (2 Marks)

The ages of a company's employees are tabulated below

| Age in Years | Number of Employees |
|--------------|---------------------|
| 20-24        | 2                   |
| 25-29        | 14                  |
| 30-34        | 29                  |
| 35-39        | 43                  |
| 40-44        | 33                  |
| 45-49        | 9                   |

- (a) Calculate the mean employee age in years. (6marks)
- (b) Calculate the standard deviation (6 marks)
- (c) Explain the advantages of the mean as compared to other measures of central tendency. (6marks)

#### QUESTION FOUR

- (a) Differentiate between positive skewness and negative skewness. (6 marks)

Find the mean, mode, and standard deviation of the following frequency distribution:

(9 marks)

|   |   |   |    |    |    |
|---|---|---|----|----|----|
| x | 2 | 4 | 6  | 8  | 10 |
| f | 1 | 6 | 18 | 10 | 5  |

- (b) Calculate the Pearson's measure of skewness for the above distribution. (5 Marks)

#### QUESTION FIVE

- (a) Distinguish between:

- (i) Bivariate and multivariate relationships. (3 Marks)
- (ii) Negative and positive correlation (3 Marks)

Table below presents hypothetical data on number of persons reporting acute sickness per a 1000 population from different counties (x) and percentage of weekly income derived from social security benefits (y)

| County       | Persons reporting acute sickness per 1000 population (x) | Percentage of household income derived from social security benefits (y) |
|--------------|----------------------------------------------------------|--------------------------------------------------------------------------|
| A            | 9.1                                                      | 10.5                                                                     |
| B            | 7.7                                                      | 10.5                                                                     |
| C            | 8.6                                                      | 9.3                                                                      |
| D            | 8.3                                                      | 9.7                                                                      |
| E            | 9.8                                                      | 7.8                                                                      |
| F            | 8.8                                                      | 7.5                                                                      |
| G            | 7.7                                                      | 9.7                                                                      |
| H            | 8.8                                                      | 8.6                                                                      |
| I            | 8.6                                                      | 11.6                                                                     |
| J            | 10.6                                                     | 12.1                                                                     |
| <b>Total</b> | <b>88.0</b>                                              | <b>97.3</b>                                                              |

- a) Using the data presented above, calculate the product moment correlation coefficient of persons reporting acute sickness and weekly household incomes derived from social security benefits. (14 Marks)