

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SOCIOLOGY

SOCI 454: SOCIAL STATISTICS II

STREAMS:

TIME: 2 HOURS

DAY/DATE: MONDAY 27/09/2021

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS

- Answer question ONE and any other TWO questions
- Do not write anything on the question paper

1. a) Explain the meaning of the following terms as applied to social statistics.

- Hypothesis
- Spearman Rank Correlation
- Multiple Linear Regression

(6 marks)

b) Adie is thrown with the following results

Number turned up	1	2	3	4	5	6
Frequency	16	20	25	14	29	28

Use chi-square statistics to test the hypothesis $\alpha = 0.05$

c) Distinguish between the following terms used in social statistics.

- One-tailed test and two tailed test
- Type I error and type ii error
- Acceptance region and rejection region.

(6 marks)

d) i) The procedure of testing hypothesis requires a researcher to adopt several steps. Describe in brief all such steps.

ii) A manufacturer considers his production process to be working properly if the mean length of the rods he manufactures is 8.5cm. The standard deviation of the rods is always about 2.5cm. Suppose a sample of 64 rods is taken and this gives a mean length of rods equal to 8.6cm. Can you infer at 5% level of significance that the process is working properly? (10 marks)

2. a) A teacher wishes to establish the relationship between performance in Mathematics (x) and in statistics (y). He administers to the same group of 10 students and obtains the following results.

student	Mathematics (x)	Statistics (y)
1	18	15
2	16	16
3	16	14
4	14	12
5	13	12
6	12	13
7	10	8
8	7	6
9	5	3
10	3	2

i) Write a regression equation

ii) Calculate the statistics marks given a student scores 15 in mathematics.

b) Describe factors that influence correlation coefficient. (20 marks)

3. Below are scores for 5 students in sociology and English

student	1	2	3	4	5
Sociology	11	12	11	13	8
English	9	8	13	12	9

- a) Calculate the Pearson product moment correlation between the two sets of scores.
- b) Suppose a sixth student who scored 17 in sociology and 15 in English is introduced into the group. Calculate the Spearman Correlation Coefficient for the six students.

(20 marks)

4. a) Using t-test, test the null hypothesis that there is no difference between experimental group and control group.

Experimental group	21	9	10	14	19	17	9	20
Control group	18	10	12	8	19	17	9	16

- c) Discuss the scales of measurement used in Correlation Analysis. (20 marks)

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