JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF HEALTH SCIENCES
UNIVERSITY EXAMINATION FOR BACHELORS IN COMMUNITY HEALTH AND DEVELOPMENT
3RD YEAR 2ND SEMESTER 2023/2024 ACADEMIC YEAR
KISUMU LEARNING CENTRE & NAMBALE CAMPUS

COURSE CODE: SBB 1409
COURSE TITLE: BIOSTATISTICS II
EXAM VENUE: KISUMU LEARNING CENTRE & NAMBALE CAMPUS
DATE: **EXAMINATION SESSION: 9:00-11:00 AM**
TIME: 2 HOURS

Instructions:

1. **Answer all the questions in Section A and ANY other 2 questions in Section B.**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates MUST hand in their answer booklets to the invigilator while in the examination room.**
4. **Use of Scientific Calculators is allowed**
5. **Start each Question on a fresh page.**
6. **Students to have standard tables without any writing on them.**

SECTION A

Answer all questions (30 Marks)

1. Define the key terms: population, sample, parameter, statistic. Give examples of each. (5 marks)
2. Distinguish between descriptive and inferential statistics. When is each used? (5 marks)
3. Explain the different types of variables (continuous, discrete, categorical). Provide one example of each. (5 marks)
4. Discuss the importance of sampling methods in biostatistics. Compare and contrast probability and non-probability sampling. (5 marks)
5. Define the following statistical tests: t-test, ANOVA, chi-square test. State when each would be used. (5 marks)
6. Explain the concepts of type I and type II error. How are they related to significance level? (5 marks)
7. Define central tendency and dispersion. List measures used to measure each. (5 marks)

SECTION B

Answer any two Questions (40 Marks)

Question 8.

Compare and contrast parametric and non-parametric tests. Choose the appropriate test based on data characteristics and research questions of your choice. Interpret and report the results.

Question 9.

a) A sample of 200 COVID-19 patients is selected. Out of these, 100 are given a drug and others are not given any drug. The results of the clinical trial are shown below.

	Number of people		
	Given drug	**Not given drug**	**Row totals**
Cured	65	55	
Not cured	35	45	
Column totals	100	100	

At 5% level of significance, test the hypothesis that the drug is effective in curing COVID-19. **(10 Marks)**

b) The test scores in a QT examination are normally distributed, with a population mean of 100. Suppose 20 people are randomly selected and tested. The standard deviation in the sample group is 15. Test the hypothesis that the average test score in the sample group will be less than 110. **(3 Marks)**

c) JOOUST has conducted a survey on the relationship between the age of students (x) and their weight, kg (y). A sample of eight students indicated below.

Age (x)	19	16	14	13	15	16	18	14
Weight (y)	65	60	55	45	58	63	75	53

Fit a regression equation for the data then estimate the average weight of a student aged 20 years. **(7 Marks)**

Question 10.

Daily energy intake of 11 healthy women are given below. Is their intake on average different from the recommended intake of 7725kJ at 5% significance level?. Use Wilcoxon Signed Rank Test.

Subject	**Daily energy intake kJ**	**Difference from 7725kJ**
1	5260	2465
2	5470	2255
3	5640	2085
4	6180	1545
5	6390	1335
6	6515	1210
7	6805	920
8	7515	210
9	7515	210
10	8230	505
11	8770	1045