JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF HEALTH SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

PUBLIC HEALTH/COMMUNITY HEALTH AND DEVELOPMENT

3RD YEAR 1ST SEMESTER 2024/2025 ACADEMIC YEAR

MAIN CAMPUS

COURSE CODE:	**SBB 1409**
COURSE TITLE:	**BIOSTATISTICS 11**
EXAM VENUE:	**STREAM: BSc Public/ Comm. Hlth & Dev**
DATE:	**EXAM SESSION:**

TIME: 2.00 HOURS

Instructions:

1. **Answer all the questions in Section A and 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.**

QUESTIONS

Q1. a) Distinguish the following as used in Biostatistics using examples.

i. Simple and composite hypotheses. (1mk)
ii. Type I and type II errors. (2mks)
iii. Significance levels and confidence limits. (1mk)
iv. One tailed and two tailed tests (2mks)
v. Independent and dependent variables (2mks)
vi. Parametric and Non-Parametric tests (1mk)
vii. Point and interval Estimators. (1mk)
viii. Null and Alternate hypothesis. (2mks)

b. State any **two** properties of a good Estimator of population parameters (2mks).

c. The following refers to the mass in graphs of proteins

In 6 food types. Determine the standard

J	**K**	**L**	**M**	**N**	**O**
40	30	50	80	90	70

A company providing test kits claims that the mean life of the kits is 1570 hrs. the mean life of a sample of 200 kits are found to be 16hrs with a standard deviation of 150hrs. determine for the company at 1% significance and level weather the claim of mean of 1570hrs life is valid and acceptable (6mks).

Q2. The data below relates to consumption of quality of a food nutrient and consequent body mass in grams by 5 patients.

Patient	**A**	**B**	**C**	**D**	**E**
Body mass (ga)	30	18	39	41	52
Nutrient (Units)	6	3	7	8	10

Required: -

a) Regression Equation representing the relationship between the variables (10mks)
b) Standard Error of the equation in (2a) (5mks)
c) Calculate the mass when units of Nutrients consumed is 5 (3mks)
d) Advice accordingly based on the results of the relationship (2mks)

Q3. a) State any **three** applications of Poisson Distributors (6mks)

b) The number of telephone calls coming into a medical referral facility between 9.00am and 10.00am is a random variable with parameter 5. The number of calls coming to the exchange between 11.00am and 2.00pm is similarly a Poisson variate with parameter 3. If the 2 periods are statistically independent, find the probability that more than 8 calls come into the exchange from 9.00am to 2.00pm (14mks)

Q4. The table below represents the relationship between calories of a foodstuff consumed by 6 students and their scores in Biostatistics Exam.

Student	**E**	**F**	**G**	**H**	**I**	**J**
Calories	20	29	14	31	11	25
Scores	50	68	30	72	25	60

Required

a) Scatter diagram to represent the relationship between the variables. (6mks)
b) Pearson correlation coefficient between the 2 variables (12mks)
c) Advice students accordingly based on the relationship. (2mks)

Q5. Given the frequency distribution:

Life span hours	**No of cells (+)**
1600 – 1799	25
1800 – 1999	32
2000 – 2199	46
2200 – 2399	58
2400 – 2599	40
2600 – 2799	30
2800 - 2999	7

Required:

a) Mean,
b) median and
c) standard deviation (20mks)