



**JARAMOGI OGINGA ODIGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF HEALTH SCIENCES**

**UNIVERSITY EXAMINATION FOR DEGREE IN COMMUNITY HEALTH AND
DEVELOPMENT**

4TH YEAR 1ST SEMESTER 2019/2020 ACADEMIC YEAR

KISII CAMPUS

COURSE CODE: SBI 3415

COURSE TITLE: BIostatISTICS II

EXAM VENUE:

STREAM: (Degree. Comm Hlth & Dev)

DATE:

EXAM SESSION:

TIME: 2 HOURS

Instructions:

- 1. The paper has 6 questions (Question one is compulsory and students are asked to answer any three from the remaining questions).**
- 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**

Question 1 (Compulsory) 25 MKS

- a) Define the following terms as used in Biostatistics:-
- i) T- score (1mk)
 - ii) P- value (1mk)
 - iii) SPSS (1mk)
- b) Differentiate between the following as used in biostatistics ;
- i) An independent samples t- test and correlated pairs t- test (2mks)
 - ii) Discrete and continuous variables (2mks)
 - iii) Qualitative and Quantitative variables (2mks)
 - iv) Pie chart and histogram (2mks)
 - v) Modal class and median class (2mks)
- c) i) What is a hypothesis? (2mks)
- ii) List two types of hypotheses (2mks)
- iii) State seven procedures for test of hypothesis (7mks)
- d) i) List two examples parametric tests (2mks)
- ii) If the probability of a bird catching an insect during a rain season is 0.40.
Find the probability in a rain season a bird catches three insects with replacement.
(3mks)

Question 2 (15mks)

- a) What is a research question? (2mks)
- b) State three examples of research questions. (3mks)
- c) 10 measurements of white blood cells are made by two instruments on 10 samples and the following results are obtained.

Sample No.	1	2	3	4	5	6	7	8	9	10
1 st instrument	10	9	10	11	8	9	7	8	9	9
2 nd instrument	10	11	9	10	9	11	12	8	10	10

Was there any difference in measurement? (10mks)

Question 3 (15mks)

- a) What is a chi- square test? (2mks)
- b) State three examples which a chi- square tests can investigate the significance of association. (3mks)
- c) In a survey conducted with women on a certain controversial issue the following results were obtained. Do the responses of two women differ? (10mks)

	Agree	Disagree	
Married	68	122	190
Unmarried	170	240	410
	238	362	600

Question 4 (15mks)

- a) What is a mean? (1mk)
- b) State four elements of a mean. (4mks)
- c) The following are heights of students in cm:

165 172 166 169 172 167
166 164 174 167 165 169
167 174 160 170 167 171
174 167 169 164 170 167
163 169 167 170 167 166

Calculate;

- i) the mode height (1mk)
- ii) the median height (1mk)
- iii) the number of class intervals (3mks)
- iv) the class width (2mks)
- v) the mean height (3mks)

Question 5 (15mks)

- a) Define standard error (2mks)
- b) A chromatographic method is employed in order to determine the percentage impurity contained in dye used in foodstuffs. The error variance of an estimate is known to be 0.8. Three independent determinations give an average of 4.2 %.
- i) Calculate the standard error. (3mks)
 - ii) Calculate a 95% confidence interval for true percentage impurity assuming that each estimate is normally distributed. (5mks)
 - iii) Comment on the confidence interval obtained above. (2mks)
- c) State three assumptions of normal distribution. (3mks)

Question 6 (15mks)

- a) What is Spearman's Rank Correlation? (2mks)
- b) State three (3) elements of the normal curve. (3mks)
- c) The scores of nine students in physics and math are as follows;

Physics:	35	23	47	17	10	43	9	6	28
Math:	30	33	45	23	8	49	12	4	31

Compute spearman's Rank Correlation. (10mks)