



**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 2ND SEMESTER 2015/2016 ACADEMIC YEAR

KISII CAMPUS

COURSE CODE: SBI 3326

COURSE TITLE: BIOSTATISTICS I

EXAM VENUE: STREAM: (BSc. P. Health / Comm Hlth & Dev)

DATE: AUGUST 2016 EXAM SESSION: MAY - AUGUST

TIME: 2.00 HOURS

Instructions:

- 1. Answer all 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**

SECTION A : ANSWER ALL QUESTIONS

1. Define term Biostatistics (3 marks)
2. Differentiate between qualitative and quantitative Variables (3 marks).
3. Giving two (-2-) appropriate example in each case, name two (-2-) types of qualitative variables (3marks).
4. What is the relationship in terms of magnitude (quantity/value) between the mode, median and mean in a non-symmetric, left skewed data distribution? (3 marks)
5. Explain the difference(s) between analytical study and descriptive study (3 marks)
6. State three (-3-) major properties/ characteristics of the Mode (3 marks).
7. Briefly describe how interquartile range is calculated (3 marks).
8. Briefly explain the meaning of coefficient of variation and how it is calculated (3 marks)
9. A study estimated the mean height of female students in a learning institution to be 4.5 feet. If the data from the study was symmetrically distributed (bell-shaped), what was the mode in this data? (3 marks)
10. Explain your answer in (i) above. (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS IN THIS SECTION

1.) a) Showing all major steps, calculate the mode and the variance in the data presented below (12 marks)

2	1	2	9
5	9	10	9
6	7	10	4
3	7	9	4
3	8	8	1

b) State two (-2-) characteristics of a good table for displaying study findings (4 marks)

c) Briefly describe the major difference between a proportion and a ratio in statistical measures (4 marks)

2.) In a village of 200 people, there were 120 females and 80 males. One third of females and a half of males were diagnosed with brucellosis.

- a) Calculate the ratio of male to female who were diagnosed with brucellosis (5 marks)
- b) Why is the measure in (4a) above a ratio and not a proportion? (5 marks)
- c) Calculate the proportion of the village population that were brucellosis positive (5 marks)
- d) Briefly explain what the following quantities represent in measures of disease prevalence study:
 - (i) Numerator (2.5 marks)
 - (ii) Denominator (2.5 marks)

3.) Below are given some descriptive statistics for two variables A and B, using these statistics and making calculations when and if necessary answer the questions below.

Statistics	Variable A	Variable B
Minimum value	0	0
First quartile	3	13
Median	6.01	18.99
Mean	10.89	19.01
Third quartile	12.11	25
Maximum value	40.02	33.12
Variance	68.94	92.97

- a) Which variable is more bell-shaped or less skewed? (5 marks)
- b) Explain your answer in (b) (5 marks)
- c) Basing on coefficient of variation, which of the random variable, A and B, is more variable? (10 marks)

4.) The monthly family income for 10 families (in dollars) is:

35, 50, 45, 50, 40, 50, 45, 45, 55 and 900

- a) Calculate:
 - i) Mean (2 marks)
 - ii) Median (6 marks)
 - iii) Range (2 marks)

- iv) Standard deviation (Use: Formula: **Sum of squares (SS)** = $\Sigma (x^2) - (\Sigma x)^2/n$) (6 marks)
- b) Which of the measures of spread/ dispersal is best for summarizing the monthly family income in the data presented above? (2 marks)
- c) Explain your answer in (b) above (2 marks)