JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY UNIVERSITY EXAMINATIONS 2012/2013

3RD YEAR 2ND SEMESTER EXAMINATION IN BACHELOR OF SCIENCE, COMMUNITY HEALTH DEVELOPMENT (MAIN)

COURSE CODE: SBI 3326

COURSE TITLE: BIOSTATISTICS I

DATE: 20/8/13 **TIME: 11.00 -1 .00 PM**

DURRATION: 2 HOURS

INSTRUCTIONS

1. **This paper contains five (5) questions in TWO sections A and B.**
2. **Answer question 1 (compulsory) and ANY other TWO questions.**
3. **Write all answer in the booklet provided.**

SECTION A

QUESTION 1 (COMPULSORY)

a. Define biostatistics and name **four** areas where Biostatistics has been applied.
(**5 Marks**)

b. State whether the following are categorical or numeric variables: (**5 Marks**)
   i. Weight readings of a patient
   ii. sex of postgraduate students in this university
   iii. Number of files in a cabinet
   iv. Annual income of a diabetic patient
   v. Blood type of 20 new born babies

c. Distinguish between:
   i. Bar graph and histogram (**2 Marks**)
   ii. Positively and negatively skewed (**2 Marks**)
   iii. Interval and ratio as a scale of measurement **(2 Marks**)
   iv. Variance and standard deviation (**2 Marks**)
   v. Range and mode (**2 Marks**)

SECTION B: Answer any TWO Questions

QUESTION 2

a) State **six** (6) properties of a normal curve **(6 marks)**
b) List **four** (4) ways of assessing skewness or normality assumption (**4 Marks**)
c) Describe two main approaches in classifying a variables giving two examples in each case (**8 Marks**)
d) Name **two** methods of data transformation (**2 Marks**)

QUESTION 3

a) Define continuous variable and give two examples (**4 Marks**)
b) In a study conducted on 5,040 primary school children in 2010 in Kisumu county, showed that 2,172 of the children passed eggs roundworm in their stools, 1,374 did not pass eggs and the remainder of the children did not submit specimen (stool).

   i. How many school children did not submit specimen (stool). (**2 Marks**)
   ii. List three (3) ways of presenting the above data. (**3 Marks**)
   iii. Present the data using two (2) of the listed ways in part ii of the question.
   (**8 Marks**)

iv. Which of the 3 ways of presentation mentioned in part ii of the question do you find most informative? Why? (**3 Marks**)

QUESTION 4

a. Name three approaches in defining probability. (**3 Marks**)

b. Distinguish between:
   i. Discrete and continuous probability distributions giving one example in each case. (**3 Marks**)
   ii. Event and outcome in probability. (**3 Marks**)
   iii. Mutually exclusive and equally likely in probability. (**3 Marks**)

c. When tetanus affects newborn infants, it has been observed only 10% recover. In a random sample of five newborn infants affected by tetanus: What is the probability that:
   i. Only **two** of them recover (**3 Marks**)
   ii. None will recover (**2 Marks**)
   iii. At least **one** will recover (**3 Marks**)

QUESTION 5

a) List **four** (4) examples of measures of variation (**4 Marks**)

b) The following are weights of students in kilograms:

65	72	66	69	72	67	68	73
66	64	74	67	65	69	63	70
67	74	60	70	67	71	70	68
74	67	69	64	70	67	72	69
63	69	67	70	67	66	70	71
75	71	64	67	76	71	77	73
69	75	71	75	64	62	67	66
66	70	73	71	67	69	71	68

   i. Construct a frequency distribution table (**5 Marks**)
   ii. What is the number of intervals (**2 Marks**)
   iii. What is the width of the intervals (**2 Marks**)
   iv. Calculate the mean, median, mode and standard deviation (**7 Marks**)