

Mount Kenya



University

UNIVERSITY EXAMINATION 2014/2015

SCHOOL OF PURE AND APPLIED SCIENCES  
DEPARTMENT OF MATHEMATICS, STATISTICS AND ACTUARIAL SCIENCE

BEDS/BTECH/BSCN  
REGULAR

UNIT CODE: BMA3116

UNIT TITLE: BIostatISTICS

DATE: DECEMBER 2014

MAIN EXAM

TIME: 2 HOURS

**INSTRUCTIONS:** Answer all questions in section A and any two questions.

1. a) Distinguish between discrete and continuous data with an example each. (2 Marks)
- i) Name the four scales. *Normal, ordinal, interval, ratio* (4 Marks)
- ii) List any two advantages of the arithmetic mean. *Easy to define, easy to calculate and understand* (2 Marks)
- b) A sample of students had a mean age of 35 years with a standard deviation of 5 years. A student was randomly picked from a group of 200 students. Find the probability that the age of the student turned out to be as follows. (6 Marks)
  - i) Lying between 35 and 40
  - ii) Lying between 30 and 40
  - iii) Lying between 25 and 30

c) The following data relates to the number of children in families of a certain locality. (5 Marks)

1 3 1 0 3 0 2 0 1 2 3 4 2 6 1 0 3 5 1 0 4 3

- i) Order the data
- ii) Determine the median, mode and the mean of the data.

d) Define the terms below.

- i) Skewness - *The degree of asymmetry of the frequency polygon* (4 Marks)
- ii) Kurtosis - *Degree of peakedness of a frequency polygon*

e) Two distribution have the following characteristics.

(4 Marks)

Distribution A	Distribution B
Mean=5	Mean=4
Mode=5	Mode=5
Median=5	Median=4.5
Std dev=2	Std dev=1.5

- i) State the type of skewness in each distribution.
  - ii) Calculate the parsons measure of skewness for each distribution
- f) Define the term simple linear regression and state two characteristics of the line of best fit. (3 Marks)

*Section B*

2. a) The quality department of a wine manufacturing company periodically selects a sample of wine specimens in order to test for their shelf life. Past experience has shown that the shelf life life of a certain type of wine is normally distributed with standard deviation of 200hrs. A random sample of 64 specimens gave a mean of 6200hrs. Find out the population mean at 95 level of confidence.

(6 Marks)

b) A random sample of 100 recorded deaths in Kenya during the past one year showed that average lifespan of 7.18 years with a standard