CENTRAL UNIVERSITY

END OF FIRST SEMESTER EXAMINATION: 2016/2017

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF ECONOMICS

ECON 105 (3 CREDITS)

INTRODUCTION TO STATISTICS I

LEVEL 100

9TH JANUARY, 2017

2 HOURS

STUDENT ID No...

INSTRUCTIONS

ANSWER ALL IN SECTION A AND SECTION B

(You may use your calculator and the provided formula sheet at the last page)

DO NOT TURN OVER THIS PAGE UNTIL YOU HAVE BEEN TOLD TO DO SO BY THE
INVIGILATOR

LECTURER: Daniel Offei

SECTION A (30 Marks)
Complete the following statements by filling in the blanks

1. The complete collection of individuals, items, or data under consideration in a statistical study is referred to as_____

2. The use of graphs, charts, and tables and the calculation of various statistical measures toorganize and summarize information is called_____

3. The techniques for reaching conclusions about a populationbased upon information contained in a sample is called_____

4. A characteristic of interest concerning the individual elements of a population or a sample is called_____

5. A variable with non-numerical value is termed as_____

6. The three most widely used measures ofcentral tendency are the _____, _____ and _____

7. Measures that describe the spread of a data set are called_____

8. The square root of the variance of a data isthe_____of the data set.

9. A quantitative variable that can assume any numericalvalue over an interval or over several intervals it termed as_____

10. The_____a data set is equal to the maximum value in the data set minus the minimum valuein the data set.

SECTION B: (70 Marks)
Answer ALL the questions

Question 1
Identify *the sample* and *the population* in each of the following scenarios.

(a) In order to study the response times for emergency 911 calls in Accra, fifty "robbery in progress" calls are selected randomly over a six-month period and the response times are recorded.

(b) In order to study a new medical charting system at Central Hospital, a representative group of nurses is asked to use the charting system. Recording times and error rates are recorded for the group.

(c) Fifteen individuals who listen to talk radio programs of various types are selected and information concerning their education level, income level, and so forth is recorded. **(12 marks)**

Question 2

The number of daily traffic citations issued on N1 highway is recorded for each day for the month of November, 2016. The frequency distribution for these data is shown in the table below.

No. of Citations	Frequency
10	4
11	8
14	9
16	x
17	3
20	4

i. Find x
ii. Give the relative frequency, cumulative frequency, relative frequency percentage and cumulative frequency percentage for the frequency distribution shown in Table.

(15 Marks)

Question 3

The table below gives the frequency distribution of the ages of *5000* shoplifters in a recent psychological study of these individuals.

Age	Frequency
5-14	750
15-24	2005
25-34	1950
35-44	195
45-54	100

From the grouped data, find;

i. The mean
ii. The median
iii. The modal class
iv. The range
v. The variance
vi. The standard deviation **(18 marks)**

Question 4

Find the *mean, median,* and *mode* for the following three data sets and confirm the shape of their distribution (ie. Bell-shaped, left skewed or right skewed)

Dataset 1: 10, 12, 15, 15, 18, 20

Dataset 2: 2, 4,6, 15, 15, 18

Data set 3: 12, 15, 15, 24, 26, 28

(15 marks)

Question 5

Michael and Elizabeth are two golfers who both average 85. However, Michael has shot as low as 75 and as high as 99 whereas Elizabeth has never shot below 80 nor higher than 90. Who is more consistent? Explain your answer. **(10 marks)**

FORMULAR SHEET

MEAN

Mean for Sample of n observations:

$$\bar{x} = \frac{\sum x}{n}$$

Mean for population consisting of N observations:

$$\mu = \frac{\sum x}{N}$$

Mean for grouped data:

$$\bar{x} = \frac{\sum xf}{n}$$

VARIANCE

Variance of sample of size n:

$$s^2 = \frac{\sum(x - \bar{x})^2}{n - 1}$$

OR

$$s^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n - 1}$$

Variance of population of size N:

$$\sigma^2 = \frac{\sum(X - \mu)^2}{N}$$

OR

$$\sigma^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}$$

Variance for grouped data:

$$s^2 = \frac{\sum x^2 f - \frac{(\sum xf)^2}{n}}{n - 1}$$

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