**PAN AFRICA CHRISTIAN UNIVERSITY**

**END OF SEMESTER EXAMINATION FOR THE DEGREE OF MASTERS OF BUSINESS ADMINISTRATION**

**MAY-AUGUST 2017**

**CAMPUS: ROYSAMBU**

**DEPARTMENT: BUSINESS**

**COURSE CODE: MBA507**

**COURSE TITLE: QUANTITATIVE ANALYSIS**

**EXAM DATE: MONDAY 24th JULY 2017**

**TIME: 9:00AM-12:00PM**

## INSTRUCTIONS

- Read all questions carefully before attempting.
- Answer Question 1(Compulsory) and any other FOUR
- Write your **student number** on the answer booklet provided.

**QUESTION ONE [COMPULSORY] – 40 MARKS**

a) With the aid of an example, explain the following measurement scales as used in collection of statistical data

   i. Ordinal scale
   **[2marks]**

   ii. Interval scale
   **[2marks]**

b) Briefly discuss three applications of statistics **[6 marks]**

c) By means of an illustration, define the term Correlation as used in statistical analysis

**[4marks]**

d) State three limitations of using mode as a measure of central tendency
**[3marks]**

d) By the help of a diagram, explain the terms Platykurtic and Leptokurtic in distribution of data
**[4marks]**

e) By the help of an illustration, describe any three methods used in establishing correlation between variables
**[9marks]**

f) With the help of an example, differentiate between discrete and continuous variables as applied in statistical analysis
**[6marks]**

h) The following data represents the marks obtained by 12 candidates who sat for statistics examination: 80,75,66,52,87,87,91,42,68,92,42,67
Determine:

   i. The median mark **[2marks]**

   ii. The modal mark **[2marks]**

**QUESTION TWO**

f) The data below represents the daily wage earned by the employees in a certain company

| **Income class** | **No. of employees** |
|---|---|
| 300 – 399 | 30 |
| 400 – 499 | 46 |
| 500 – 599 | 58 |

| | |
|---|---|
| 600 – 699 | 76 |
| 700 – 799 | 60 |
| 800 – 899 | 50 |
| 900 – 999 | 20 |

Compute and comment on:

i. The mean daily wage **[5marks]**

ii. The median wage **[5marks]**

iii. The modal wage **[5marks]**

**QUESTION THREE**

**a)** By use of an illustration, briefly describe the meaning of the term normal distribution as used in statistical analysis

**[3marks]**

b) The data below represents the weight of athletes in a competition

| Weight class | No. of athletes |
|---|---|
| 110 – 119 | 5 |
| 120 – 129 | 7 |
| 130 - 139 | 12 |
| 140 – 149 | 20 |
| 150 – 159 | 16 |
| 160 – 169 | 10 |
| 170 – 179 | 7 |
| 180 – 189 | 3 |

Determine and **interpret**:

i. The standard deviation of the weight **[6marks]**

ii. The Coefficient of variation **[2marks]**

iii. Interquartile range **[3marks]**

**QUESTION FOUR**

a) A statistician collected the following information relating to the width and depth of holes dug in the field by a group of students for agricultural research purposes.

| Sample | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|

| Width (cms) | 0 | 50 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| Depth (cms) | 0 | 10 | 28 | 42 | 59 | 51 | 73 | 85 | 104 | 96 |

Using the Spearman Rank correlation technique, determine and interpret the strength of the relationship between the two measurements
**[7marks]**

b) An analyst collected the figures below on variables X and Y

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X | 14 | 19 | 24 | 21 | 26 | 22 | 15 | 20 | 19 |
| Y | 31 | 36 | 48 | 37 | 50 | 45 | 33 | 41 | 39 |

Given that the standard deviation values (δ) of variables X and Y are determined as 3.65 and 6.20 respectively, calculate:

i. Covariance between variable X and Y
**[4marks]**

ii. Karl Pearson Correlation Coefficient between X and Y

**[4marks]**

**QUESTION FIVE**

a) Differentiate between dependent and independent variables as used in regression analysis **[4 marks]**

b) A researcher thinks that the number of vehicles of a specific model imported by Kenyans is dependent on their prices. Based on the above belief, he collected the following data during the year 2013.

| **Price (in dollars)** | **No of vehicles (imported)** |
|---|---|
| 2000 | 3200 |
| 4000 | 3000 |
| 6000 | 2500 |
| 8000 | 2300 |
| 9000 | 1500 |
| 11000 | 1100 |

**Required:**

i. Determine and interpret the regression equation that describes the above relationship
**[8mrks]**

ii. Using the established regression equation, determine the number of vehicles imported when the price rises to 20,000 dollars per vehicle. **[3 marks]**

**QUESTION SIX**

a) Toyota, Tata and Honda companies specializes in manufacturing motor vehicles in for exports to Europe. Toyota Ltd enjoys 70% of the market share, Tata Ltd has 20% market share while Honda Ltd has 10% of the market share.

Research survey in the European market has established that the defects rate for the vehicles manufactured by each company is as follows:

Toyota Ltd - 3%,

Tata Ltd – 6%

Honda Ltd – 9%.

If a vehicle is randomly selected from the European market, determine the probability that it was manufactured by:

i. Toyota Ltd **[1mark]**

ii. Honda Ltd **[1mark]**

iii. Tata Ltd **[1 mark]**

b) If the randomly selected vehicle is tested and found defective, determine the probability that it was manufactured by:

i. Toyota Ltd **[6marks]**

ii. Honda Ltd **[6marks]**