WOMEN'S UNIVERSITY IN AFRICA

Addressing gender disparity and fostering equity in University Education

FACULTY OF MANAGEMENT AND ENTREPRENEURIAL SCIENCES

BSc HONOURS DEGREE IN MANAGEMENT AND ENTREPRENEURIAL DEVELOPMENT STUDIES SPECIALISING IN MANAGEMENT & MARKETING/ BANKING & FINANCE
BACHELOR OF ACCOUNTING SCIENCE HONOURS DEGREE

BSc HONOURS DEGREE IN PURCHASING & SUPPLY CHAIN MANAGEMENT

MAIN PAPER

BM125: QUANTITATIVE METHODS (STATISTICS)

INTAKES 27 & 12: FIRST YEAR SECOND SEMESTER

DATE: TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

Answer Question **1** and any other **two.**

Question 1

a) Define the following terms

i) Null hypothesis [2]

ii) Significance level [2]

iii) Univariate data [2]

iv) Sample [2]

v) Type 1 error [2]

b) The annual salaries (in thousand dollars) of 25 employees are shown below.

90 66 82 73 67 58 98 101
57 87 102 67 107 76 73 89
76 99 88 87 67 85 92 73
85

i) Present the data on a stem and leaf plot. [5]

ii) Find the median salary. [3]

iii) Find the lower quartile. [3]

iv) Find the upper quartile. [3]

v) Draw a box and whisker plot for the data. [4]

vi) Comment on the distribution of these salaries. [2]

vii) Calculate the mean salary of the employees. [4]

viii) Calculate the variance. [6]

Question 2

a) List the four components of time series. [4]

b) State the effects on the pattern of plot, of using a 4 point moving average compared to a 3 point moving average. [2]

c) A group of twenty people played a game. The table below shows the frequency distribution of their scores.

Score(x)	1	2	3	x
Number of people	2	4	8	6

i) Find an expression for the mean score. [4]

ii) Given that the mean score is 5, find the value of x. [4]

iii) Calculate the variance of the distribution. [6]

Question 3

A random sample of employees were asked to classify their salaries and academic qualifications. The results are summarised in the table below.

	certificate	diploma	degree
low	18	24	28
medium	21	23	26
high	17	21	32

Test at 5% level of significance whether there is association between earning and academic qualification of the employee. [20]

Question 4

(a) Explain the concept

(i) Seasonal variation, [2]

(ii) Trend as used in time series analysis. [2]

(b) The following quarterly data represent the number of customers a certain pharmacy handled between 2007 and 2009.

YEAR	QUARTER	NUMBER OF CUSTOMERS
2007	1	1700
	2	3400
	3	2800
	4	2300
2008	1	2100
	2	3500
	3	2000
	4	2000
2009	1	2600
	2	4600
	3	3850

	4	3800

(i) Plot a time series graph using a scale of 2 cm to represent 500 customers on the vertical axis and 2 quarters on the horizontal axis. [5]

(ii) Calculate the 4 - point moving averages of the data. [4]

(iii) Calculate the centred moving averages and plot them. Hence draw the trend line. [5]

(iv) Comment on the trend. [2]

Question 5

The table below the number of calls to potential customers made by six sales representatives and sales turnover

Number of calls	17	16	18	16	11	12
Sales turnover($1000)	11	10	14	12	8	9

i) Draw a scatter diagram for the sales turnover against number of calls. Comment on your scatter diagram. [6]

ii) Calculate the equation of the regression line of sales turnover on number of calls. [10]

iii) Find the product moment correlation coefficient and comment on it. [4]

Question 6

a) If the product moment correlation coefficient $r = 0.8786$, what is the most appropriate comment on the correlation between independent variable x and dependent variable y. [3]

b) Forty students wrote a test and marks obtained were recorded in the frequency table below.

Mark (%)	$10<x \leq 20$	$20<x \leq 50$	$50<x \leq 60$	$60<x \leq 70$	$70<x \leq 80$	$80<x \leq 100$
frequency	4	6	8	4	12	p
Frequency density	0.4	q	r	s	t	u

Find the value of

i) p [1]

ii) q [2]

iii) r [2]

iv) s [2]

v) t [2]

vi) u [2]

c) Draw a histogram to represent the table above. [6**]**

END