The Management University of Africa

MUA

Sponsored by the Kenya Institute of Management

UNDERGRADUATE UNIVERSITY EXAMINATIONS

SCHOOL OF MANAGEMENT AND LEADERSHIP

DEGREE OF BACHELOR OF ARTS IN DEVELOPMENT STUDIES

BDS 109: STATISTICS

DATE: 26TH MARCH 2025

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **THREE** questions.
6. Question **ONE** carries **25 MARKS** and the rest carry **15 MARKS** each.
7. **Write all your answers in the Examination answer booklet provided.**

QUESTION ONE

a) Given the following data: 314, 225, 330, 119, 206, 311, Calculate the arithmetic mean and the median of the distribution **(2 Marks)**

b) Identify three uses of statistics in Development Studies **(3 Marks)**

c) Explain four reasons why researchers use a sample data instead of population data **(4 Marks)**

d) Consider the following distribution of Exam marks obtained by 8 students in BDS class

BDS 109	74	75	80	66	71	70	62
BDS 103	70	72	68	75	77	71	73

Required: Calculate the Rank Coefficient of Correlation and comment on the answer **(6 Marks)**

e) Why is Fishers index commonly referred to as 'ideal'? **(3 Marks)**

f) Let: ε = letters in the word GENE'RAL

A = letters in the word ANGEL

B = letters in the word LEAN

Use the diagram or otherwise to list the sets: **(7 Marks)**

i) A^c

ii) $(A \cap B)^c$

iii) $(A^c \cup B)$

iv) $n(A) + n(B)^c$

QUESTION TWO

The following data was obtained from students who were registered in a certain college. The table shows the age distribution.

Age (years)	No. of Students (f)
15 – 19	21
20 – 24	35
25 – 29	38
30 – 34	49
35 – 39	31
40 – 44	19

Required:

a) Calculate the mean age of the students **(4 Marks)**

b) Determine the standard deviation **(9 Marks)**

c) Determine the coefficient of variance **(2 Marks)**

QUESTION THREE

The number of sales personnel employed at each of 10 exhibitions and the number of cars booked at each one is given as follows.

No of Salesmen (X)	5	8	6	8	9	3	5	4	6	6
No of Cars (Y)	132	160	148	156	168	102	142	98	152	142

Required:

a) Determine the regression equation of the number of cars booked on the number of salesmen. **(9 Marks)**

b) Use the regression line obtained to predict number of cars if 20 salesmen are to be employed. **(2 Marks)**

c) Determine the coefficient of correlation between the two variables **(4 Marks)**

QUESTION FOUR

a) Draw diagrams showing positive and negative skewness **(8 Marks)**

b) Explain the two methods used in constructing a simple index number **(4 Marks)**

c) Explain briefly, the meaning of the following concepts: **(3 Marks)**

i. Skewness

ii. Kurtosis

iii. Dispersion

QUESTION FIVE

a) Define the following terms as used in statistics **(5 Marks)**

i. Class interval

ii. Score limits

iii. Class size

iv. Real limits

v. Mid points

b) The following data relates to commodity X for a period of two years:

	2022		2023	
Commodity	**Value**	**Quantity**	**Value**	**Quantity**
A	8,500	50	10,800	60
B	9,000	60	10,725	65
C	10,500	75	11,600	80

Compute the Fisher's 'ideal' price index **(10 Marks)**

QUESTION SIX

a) Identify any five limitations of statistics in its application in business **(5 Marks)**

b) Out of a group of 60 people, 20 invested in the stock market, 35 had Certificate of Deposit (CD's) and 34 had savings bonds. Furthermore 23 had both CD's and bonds, 13 had both CD's and stocks and 13 had both stocks and bonds. Finally, 10 of the people had no investments. Use Venn diagram to determine how many of the 60 people had all the three type of investments **(10 Marks)**