



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2020/2021 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER

SPECIAL/SUPPLEMENTARY EXAMINATION

FOR THE DEGREE OF BACHELOR OF EDUATION AND **BACHELOR OF SCIENCE**

COURSE CODE:

STA 111

COURSE TITLE: INTRODUCTION TO STATISTICS

DATE: 30/09/2021

TIME: 11:00 AM- 1:00 PM

INSTRUCTIONS TO CANDIDATES

Answer Question One and Any other TWO Questions

TIME: 2 Hours

This Paper Consists of 4 Printed Pages. Please Turn Over.

QUESTION 1: [30 Marks] (COMPULSORY)

a) Define the term statistics

(1mk)

b) Briefly discuss any two applications and limitations of statistics in management

(5mks)

c) Differentiate between the following terms

i. Primary and secondary data

(2mks)

ii. Quantitative and qualitative data

(2mks)

iii. Nominal and ordinal levels of measurement

(2mks)

d) Highlight the uses and limitations of using index numbers in data analysis

(4mks)

e) The process of a Tea factory shares in Chebut and Kaptumo markets during the last ten months are recorded below

Month	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct
Chebut (X)	105	120	115	118	130	127	109	110	104	112
Kaptumo (Y)	108	117	120	130	100	125	125	120	110	135

Determine the arithmetic mean and standard deviation of the prices of shares. In which market are the share prices stable?

(4mks)

f) The following figures relate to length of service and income of the employees of an organization

Length of service (Years) [X]	11	7	2	5	8	6	10
Income (Thousands) [Y]	7	5	3	2	6	4	8

Find the two regression equations and hence compute the coefficient of correlation (4mks)

g) The data below shows ages (X) and blood pressure (Y) of 8 persons

X	42	53	35	26	62	55	37	15
Y	52	43	41	15	69	33	50	23

Find the correlation coefficient using

i. Spearman rank correlation method

(3mks)

ii. Pearson product moment correlation method

(3mks)

QUESTION 2: [20marks]

- a) Describe four factors that you need to consider when designing a questionnaire (4mks)
- b) State any four qualities of a good measure of central tendency

(4mks)

c) Construct a scatter plot from the data obtain in a study on the number of absentees and the final grade of seven randomly selected students from a biostatistics class in the data given below

Student	Number of absentees (X)	Final grade (Y)
A	8	84
В	4	88
C	17	45
D	11	76
E	13	60
F	7	92
G	10	80

- d) Find the equation of the regression line for the data given in (a) above, and graph the line on the scatter plot (6mks)
- e) Find the correlation coefficient between the number of absentees and final grade (6mks)

QUESTION 3: [20marks]

a) Why do we study measures of variation?

(2mks)

- b) Define the term "Range" and highlight its disadvantages as a measure of dispersion 5mks)
- c) Highlight four factors that must be considered in the construction of indices (4mks)
- d) The following are quantities and prices of six commodities consumed by a middle class family in Kobuchai sub-county for the years 2019 and 2020

Commodity		A	В	C	D	Е	F
Duine (6)	2019	50	100	50	90	90	110
Price (\$)	2020	70	120	55	85	130	100
Overetity (100)	2019	560	800	50	130	610	550
Quantity (kg)	2020	510	910	105	210	660	690

Compute Paasche's, Laspeyre's, and Fisher's ideal price indices for 2020 with 2019 as the base year (9mks)

QUESTION 4: [20marks]

a) Differentiate between skewness and Kurtosis as used in statistics

(2mks)

b) State four basic characteristics of a Normal distribution

(4mks)

c) The following data relates to daily bills (in Ksh) on consumption of a certain commodity for 50 households

Daily Bills	(Ksh	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
(00')	V.	3	8	10	9	6	7	5	2

Calculate

	Maria	(2mks)
1.	Mean	(3mks)
ii.	Median	
iii.	Standard deviation	(3mks)
iv.	Coefficient of variation	(2mks)
	Karl Pearson degree of skewness	(3mks)
V.		(1mk)
vi.	Comment on the symmetry of the distribution	(IIIK)

QUESTION 5: (20marks)

a) Discuss observation as an ideal method of data collection

(4mks)

b) State the advantages and disadvantages of sampling

(4mks)

c) Calculate index numbers of prices from the following data by applying

2	2004	2	2005
		Price	Quantity
2	8	4	6
5	10	6	5
1	14	5	10
2	19	2	13
	Price 2 5 4 2	2004 Price Quantity 2 8 5 10 4 14 2 19	2004

_	·	and the d	(3mks)
	Laspeyre's		(3mks)
	Paasche's n		(2mks)
iii.	Bowley's n	nethod	(2mks)
iv.	Fisher's me	ethod	
v.	Marshall-E	dgeworth's method	(2mks)