

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

SUPPLEMENTARY EXAM

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR  
OF SCIENCE IN ENVIRONMENTAL SCIENCE

ECON 232/233/234: ECONOMICS STATISTICS 1

STREAM: BSC. ENSC, BECO, NARE (Y2S2)

TIME: 2 HOURS

DAY/DATE: TUESDAY 17/11/2020

8.30 A.M. – 10.30 A.M.

**INSTRUCTIONS: Answer Question ONE and any other TWO Questions**

QUESTION ONE

- a) Explain any four problems encountered when constructing index numbers (4 marks)
- b) The chief accountant of Rachel (K) limited wants to prepare a report on the company's account receivable. Below is a frequency distribution showing the amount outstanding.

Amount (Ksh)	Frequency
0 - 2000	4
2000- 4000	15
4000-6000	18
6000- 8000	10
8000-10000	4
10000-12000	3
12000-14000	6

From the above information, determine;

- (i).The mean amount of the accounts receivable (4 marks)
- (ii). The median amount (3 marks)
- (iii).The modal amount owned (2 marks)

(iv).The standard deviation

(5 marks)

c). The following information relates to the expenditure by an average income family during the years 2004 and 2005.

Item	2004		2005	
	Price (sh)	Quantity	Price (sh)	Quantity
Milk (litres)	25	1000	27	1200
Maize flour (kg)	48	240	59	260
Rice (kg)	65	180	70	200
Sugar (kg)	52	60	65	50
Wheat flour (kg)	50	80	75	60

From the above information, determine

- (i). The Laspeyre’s price index and interpret your results (4 marks)
- (ii).The Paasche’s price index and interpret your results (4 marks)
- (iii). The Fisher’s price index (2 marks)

d). Explain the main aim of Lorenz curve in statistics (2 marks)

**QUESTION TWO**

a). A random variable is normally distributed with  $\mu = 50$  and  $\sigma = 10$ . Compute  $P(45 < X < 62)$  (3 marks)

b). The following table shows the length of 40 leaves

Length (mm)	Frequency
118- 126	3
127- 135	5
136-144	9
145-153	12
154-162	5
163-171	4
172-180	2

Draw a histogram and frequency polygon on the same axes (5 marks)

d). The following information shows the distribution of income before tax

Income Ksh '000'	Number of incomes	Total income before tax for group Ksh. '000'
0-3000	8	20
3000-4000	24	91
4000 - 6000	30	165
6000- 8000	52	380
8000- 10000	50	450
10000- 15000	19	219
15000-20000	11	187
20000 - 30000	6	132
40000-50000	5	205

Using the information above, draw a Lorenz curve

(10 marks)

**QUESTION THREE**

a). Chakula limited manufactures three products namely Biscuits, bread and cakes. The sales for four years was as follows.

Year	Biscuits	Bread	Cakes	Total
2005	50	80	40	170
2006	60	100	50	210
2007	70	110	30	210
2008	90	120	50	260

Present the above information in a component bar chart

(6 marks)

b). Explain the following methods of sampling

(i). Stratified random sampling

(ii) Convenient sampling

(iii).Snowball sampling

(iv). Simple random sampling

(8 marks)

c). The time taken to complete jobs of a particular types is known to be normally distributed with mean of 6.4 hours and a standard deviation of 1.2 hours. What is the probability that a randomly selected job of this types takes

(i) Less than 7 hours

(ii) Less than 6 hours

(iii) Between 6 and 7 hours

(6 marks)

**QUESTION FOUR**

a). Outline properties of a good measure of dispersion

(4 marks)

b). A random sample of 100 students from Chuka university showed an average I.Q of 112 with a standard deviation of 10. Find

(i). 95% confidence interval estimate of the mean I.Q score of all students attending Chuka university

(ii). 99% confidence interval estimate of the mean I.Q of all students attending Chuka University

(6 marks)

c). Outline the main aspects of a good questionnaire

(6 marks)

d). Distinguish between independent events and mutually exclusive events

(4 marks)

-----