

LAIKIPIA



UNIVERSITY

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2023/2024 ACADEMIC YEAR

FIRST YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ECONOMICS &
STATISTICS

ECON 113: ECONOMICS STATISTICS I

STREAM: ECON STAT

TIME: 2 HRS

DAY: FRIDAY [11.30-13.30 P.M]

DATE: 15/12/2023

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.



INSTRUCTIONS**Answer Question ONE and any other two questions****QUESTION ONE (COMPULSORY) (30 MARKS)**

- a) What do you understand by the term statistics? **(1mark)**
- b) Discuss the scope of statistics. **(2marks)**
- c) Giving examples, state three methods of data presentations. **(9marks)**
- d) Using a well labeled diagram, show what is meant by normal distribution of data. **(5marks)**
- e) The following is record of the percentage marks gained by candidates in an examination.

65	57	57	55	20	54	52	49	58	52
86	39	50	48	83	74	66	54	51	27
30	44	34	78	36	63	67	55	40	56
63	75	55	15	96	51	54	52	53	42
50	25	85	27	75	40	37	46	42	86
16	45	12	79	50	46	46	59	57	50
56	74	50	68	52	61	40	38	57	31
35	93	54	26	67	62	51	52	54	61
93	84	28	66	62	57	45	43	47	33
45	25	77	80	91	67	33	55	51	36

Required:

- (i) Using a class interval of 5, Present the data in the form of cumulative frequency distribution table **(5marks)**
- (ii) Using a class interval of 5, present the data in the form of a frequency polygon and an ogive **(5marks)**
- (iii) Using your solution in (a) above, calculate the arithmetic mean **(3marks)**

QUESTION TWO (20 MARKS)

- a) Differentiate using examples between the Lorenz curve and Z chart. **(4marks)**
- b) Differentiate between arithmetic, harmonic and geometric mean **(6marks)**



- c) Find the 3rd quartile of the following (3marks)

6 8 10 14 18 20 20 21 22 24 25 28

- d) Compute the lower and upper quartile for the below frequency distribution

(7marks)

Class marks for ECON 113 Continuous Assessment Test

<u>Class</u>	<u>Σf</u>	<u>cf</u>
5.5 – 9.5	5	5
10.5 – 14.5	6	11
15.5 – 19.5	15	26
20.5 – 24.5	10	36
25.5 – 29.5	5	41
30.5 – 39.5	4	45
35.5 – 39.5	2	47
40.5 – 44.5	2	49

QUESTION THREE (20 MARKS)

- a) Find the mean deviation of the following grouped data (10 marks)

Class marks for a form four class

Classes (marks)	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency (No. of students)	2	4	4	8	6	3	2

- b) Explain the following terms (6marks)

- (i) Range
- (ii) Interquartile Range
- (iii) Quartile Deviation

- c) The marks obtained by 30 students in a statistics quiz marked out of 20 were as shown below. Find the variance **(4marks)**

Marks obtained by 30 students in a statistics quiz

Marks (X)	f	fX	fX^2
8	2	16	128
9	3	27	243
10	4	40	400
11	4	44	484
12	5	60	720
14	3	42	588
15	3	45	675
17	3	51	867
18	2	36	648
20	1	20	400
	<u>30</u>	<u>381</u>	<u>5153</u>

QUESTION FOUR (20 MARKS)

- a) A manufacturer of TV cables has 2 types of tubes A and B. the tubes has respective mean life times

$$\bar{X}_A = 1501 \text{ hrs} \quad \text{and} \quad \bar{X}_B = 1923$$

$$\sigma_A = 284 \text{ hrs} \quad \text{and} \quad \sigma_B = 297$$

Required

Which one of the 2 types of tubes has greater relative dispersion? **(2marks)**

- b) Find pearsons first and second coefficient of skewness for the following grouped data **(5marks)**

Marks obtained by students in a statistics exam

<u>Class</u>	<u>f</u>
50 – 60	8
60 – 70	10
70 – 80	16
80 – 90	14
90 – 100	10
100 – 110	5
<u>110 – 120</u>	<u>2</u>

- c) The following table classifies all the patient's smokers / non-smokers and as having cancer and not having cancer.

	Lung cancer	No lung cancer	Totals
Smoker	15	25	40
Non-smoker	5	55	60
Totals	20	80	100

Required

- (i) What is the probability that the patient has lung cancer? **(2marks)**
- (ii) What is the probability that the patient is a smoker? **(2marks)**
- (iii) What is the probability that the patient has lung cancer and is a smoker? **(2marks)**
- (iv) What is the probability that the patient has lung cancer given that he is a smoker? **(2marks)**
- d) A bag contains 4 red, 5 white, and 3 blue beads. We pick a bead at random from the bag, shake and pick a bead at random. Using a tree diagram, find the outcomes and their probabilities assuming replacement. **(5marks)**

QUESTION FIVE (20 MARKS)

- a) Explain using examples, the different types of statistics **(3marks)**
- b) Differentiate between functions and uses of statistics **(5marks)**
- c) Discuss using examples the main stages of a complete statistical study **(10 marks)**

