CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

MAIN/CHOGORIA CAMPUS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF EDUCATION (ARTS AND SCIENCE)

EPSC 123: STATISTICAL METHODS IN EDUCATION

STREAMS: **TIME:2 HOURS**

DAY/DATE: THURSDAY 13/04/2023 **2.30 P.M. –4.30 P.M.**

INSTRUCTIONS

Answer question one and any other two
Do not write on the question paper

QUESTION ONE

a) Define the following concepts as used in educational statistics

i. Inferential statistics

ii. Descriptive statistics

iii. Parametric statistics

iv. Non parametric statistics

v. Hypothesis testing (10 marks)

b) The score of a physics continuous assessment test (CAT) generated the following data

16	20	21	19	20	21	21	20	22	20	18	24
19	21	20	21	22	23	22	22	22	21	19	25
20	21	21	22	23	23	23	22	23	21	20	20
21	22	22	20	23	24	24	19	23	22	21	21
22	22	22	19	21	25	25	18	23	23	22	22
19	20	21	22	24	23	24	24	19	18	23	21

i. Tally the scores and prepare an ungrouped frequency distribution table. (4 marks)

ii. From your table, calculate:

a. Mean (3 marks)

b. Variance (4 marks)

c. Standard deviation (2 marks)

iii. Identify the mode (1 mark)

iv. Locate the median (1 mark)

c) State any two (2) properties of a good measure of dispersion (2 marks)

d) i) Draw, and label the rejection and acceptance regions of a two tailed test (2 marks)

ii) Explain how the two tailed test diagram is used in hypothesis testing (2 marks)

QUESTION TWO

a) Explain any five (5) factors that influence correlation coefficient (10 marks)

b) The scores of six students in physics and chemistry were recorded as follows

Physics	16	15	14	13	12	11
Chemistry	12	20	24	26	28	29

c) i) Compute the spearman's rho (e) correlation coefficient (8 marks)

ii) Comment on answer in (i) above (2 marks)

QUESTION THREE

a) Differentiate between the following pair of term

i. Mutually exclusion and mutually inclusive events

ii. Joint probability and unconditional probability (4 marks)

b) In an event of losing two dice together, what is the probability that the sum of the two upper faces will be

i. 4

ii. 8

iii. Less than 6

iv. Greater than 5 less than 10

v. Greater than 12 (10 marks)

c) A bag contains Brown, red, yellow, green and orange balls. The probability of each outcome is shown.

Balls	Brown	Red	Yellow	Green	Orange
Probability	0.3	0.2	0.25	0.15	0.1

Determine the probability of obtaining the following balls.

i. Red and yellow and green balls
ii. Red and green or orange
iii. Not obtaining orange ball (6 marks)

QUESTION FOUR

a) The following table shows distribution of marks scored by 40 students in a mathematics exam.

Marks	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Frequency	3	4	2	5	8	11	2	1	3	1

Calculate

i. The medium (3 marks)
ii. Mode (3 marks)
iii. First quartile (Q1) for the data (2 marks)
iv. Third quartile (Q3) for the data (2 marks)
v. Quartile deviation (2 marks)

b) Identify any two (2) disadvantages of using range as a statistical measure in describing students performance (4 marks)

c) Discuss any two (2) limitations of statistics encountered by educationists while handling students data (4 marks)
