

CHUKA**UNIVERSITY****UNIVERSITY EXAMINATIONS****MAIN/EMBU CAMPUS****EXAMINATION FOR THE AWARD OF DEGREE OF MASTERS OF ARTS IN EDUCATION****EDUC 803: STATISTICAL METHODS IN EDUCATION****STREAMS: (MED)****TIME:3 HOURS****DAY/DATE: TUESDAY 25/04/2023****8.30 A.M. –11.30 A.M.****INSTRUCTIONS**

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

Question One

a) Distinguish between the following pairs of terms as used in educational statistics

- Parametric and non-parametric statistics
- Qualitative and quantitative data
- One tailed and two tailed tests
- Discrete and continuous variable
- Statistical hypothesis and null hypothesis

(10 marks)

b) The control and experience groups of a study generated the following scores

Control group	25	27	21	23	22	20	21	19	23	28
Experimental group	26	27	21	24	20	19	23	27	29	30

Does this data present enough evidence that the experimental group scores are better than the control group scores. State the null hypothesis and test it at $\alpha = 0.05$ significant level.

(12 marks)

- c) Identify the four types of measurement scales and how they impact the statistical analysis of data (4 marks)
- d) Evaluate the condition required for one to use one way analysis of variance in data analysis (4 marks)

Question Two

- a) Describe a chi-squared test and conditions under which it would be used in educational research (3 marks)
- b) In an event of tossing a coin 20 times the outcomes were 12 heads and 8 tails. Test the hypothesis that the coin not biased, at $\alpha=0.05$ significance level (7 marks)
- c) Explain the steps in hypothesis testing (5 marks)

Question Three

- a) All human being blood can be grouped as either O, A, B or AB. The following is the distribution of blood of randomly chosen people

Blood types	O	A	B	AB
Probability	0.25	0.175	-	0.275

What is the probability of having blood group:

- i. A or O
- ii. A and B or O and B (14 marks)
- b) The scores of mathematics and physics examination were recorded as follows

Maths	3	9	10	6	8	5	2
Physics	4	7	12	2	5	3	6

Compute the spearman Rank Order correlation Coefficient and interpret the results (11 marks)

Question Four

- a) Explain any two characteristics of a normal distribution (14 marks)
- b) Given the following three scores of three groups of students in an educational study

Group A scores	Group B scores	Group C scores
6	5	5
7	5	4
3	3	3
8	7	4

- i. Set up an analysis of variance table.
- ii. Form your table, explain whether there is any statistical significance difference in the group means. Test is $\alpha = 0.05$ significant level. (16 marks)