



(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR
FIRST YEAR SECOND SEMESTER
MAIN EXAMINATIONS

FOR DOCTOR OF PHILOSOPHY IN CURRICULUM AND INSTRUCTION

COURSE CODE: CUT 924 COURSE TITLE: ADVANCED STATISTICAL RESEARCH METHODS IN EDUCATION

DATE: 3/8/2021

TIME: 2:00 PM---5:00 PM

INSTRUCTIONS TO CANDIDATES

Answer Question One and Any TWO other (2) Questions
TIME: 3 Hours

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

QUESTION ONE

- a) Define data analysis (2 marks)
- b) Distinguish between the following terms as used in research giving an example of each.
 - i. Quantitative and qualitative data (6 marks)
 - ii. Measures of central tendency and measures of relationship (6 marks)
 - iii. Descriptive and inferential statistics (6 marks)

QUESTION TWO

- a) Given univariate data, measures of central tendency are most commonly used to analyse and explain the data. Justify why the mean is considered the measure in describing univariate data other than the mode or the median.
- b) A researcher investigated the performance in mathematics in two different streams in a school taught by two different teachers. The marks scored by students in the two streams are as indicated.

STREAM	MARKS									
Y	72	66	64	40	58	59	65	62	49	48
Z	69	68	59	58	63	49	50	53	44	69

Use the coefficient of variation to explain which class had a better performance in mathematics.

QUESTION THREE

The Pearson correlation and the Spearman rank correlation are commonly used to determine if there exists a linear relationship between the dependent and the independent variables in a study.

- State clearly the types of data that will qualify the use of each of these measures in the analysis of data. (5 marks)
- Explain whether the existence of a relationship between two variables implies that one variable causes the other. (3 marks)
- A researcher sought to find out if there was any relationship between the scores for 12 students on two Mathematics exam papers. For the first paper calculators were allowed and for the second paper they were not.

Paper 1	74	73	65	75	68	72	69	71	83	68	68	73
Paper 2	75	83	69	77	71	77	68	76	84	69	71	75

Use the Spearman's rank correlation to compute the correlation coefficient for the tests and comment on your results. (12 Marks)

QUESTION FOUR

Define a hypothesis and distinguish between a null hypothesis and an alternative hypothesis. (6 marks)

Explain the circumstances under which type I and type II errors can be committed by a researcher.

An assumption was made that exposure to varied music intensity influences a learners performance on a task. Students were assigned to three different groups and exposed to music of varied intensity. Use the information in the table below to

state a null hypothesis and use Analysis of Variance to test the hypothesis at 0.05 level of significance.

Constant	40	70	60	60	80	60	80	90	70	50
Music										
Variable	30	40	50	60	70	50	40	50	60	70
Music										
No	60	70	50	70	50	60	70	70	50	60
Music										

Use Anova at $\alpha = 0.05$ level of significance to discuss the results (15 marks)

QUESTION FIVE

- a) A sample of 125 students were enrolled in different courses at Kibabii University. Five of the courses were found to be highly preferred by the students. Use the table below to formulate a null hypothesis and test it at 0.05 level of significance using Chi-square. (10 marks)

Course	Education	Computing	Journalism	Criminology	Business
Frequency	26	35	15	28	21

- b) The distribution of businesses at a market center was among different age groups. The table below shows the distribution of businesses across the different age groups. State a null hypothesis and test it using Chi-square at 0.05 level of significance. (10 marks)

Age group	Electronics	Butcheries	Groceries	Mpesa
Youths	18	8	10	24
Middle age	16	12	16	14
Elderly	6	20	24	2