KISII UNIVERSITY
UNIVERSITY EXAMINATIONS
FIRST YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF MASTERS IN EDUCATIONAL MANAGEMENT (ADMINISTRATION)
FIRST SEMESTER, 2021/2022
(APRIL, 2022)

EDUC 903: ADVANCED APPLICATION OF EDUCATIONAL STATISTICS

STREAM: Y1 S1   **TIME: 3 HOURS**

DAY: FRIDAY, 9:00 – 12:00 P.M.   **DATE: 08/04/2022**

INSTRUCTIONS
1. *Do not write anything on this question paper.*
2. *Answer question ONE (Compulsory) and any other TWO questions.*

QUESTION ONE.

a) The grades for 12 students in a Literature test are 81 75 98 72 86 61 58 90 85 74 78 74
   - i.   Calculate the mean score of the subject   [2 Marks]
   - ii.   What is the mode performance of the class   [2 Marks]
   - iii. Calculate the median score   [2 Marks]
   - iv.   Calculate the variance   [2 Marks]

b) Discuss by citing relevant examples steps involved in Hypothesis Testing
                                                                        [5 Marks]
c) Determine the statistical differences between descriptive and inferential statistics   [2 Marks]
d) Explicate the circumstances when the Chi-Square Test for Independence should be used.   [10 Marks]
e) Differentiate between ordinal and nominal scales in statistical analysis

QUESTION TWO

Let us take the hypothesis that there is no statistical relationship between gender and the location of hotels. The table given below shows the data obtained during a business survey.

Operators	Hotels	Total	
	In Town	In Village	
Men	17	18	35
Women	3	12	15
Total	**20**	**30**	**50**

Test the relationship between gender and business location. Test your result with the help of the table at 5 per cent level of significance (0.05) . Use Chi-square table and the formula appropriately showing of all the steps and eventual decision.   [15 Marks]

QUESTION THREE

The following are Mathematics scores from eight students from two samples A and B.

Sample A	Sample B
25	29
26	28
27	35
31	32

Calculate the Mann-Whitney U test statistic. Show all the steps involved in determining
whether the null hypothesis was rejected or retained at alpha level of .05
                                                                        [15 Marks]

QUESTION FOUR

In a hypothesis testing using Z-Test, the mean grade point average for one college is 2.45 with a standard deviation of 0.69. An engineering professor believes that engineering majors have a higher grade point average (GPA) than

the college's mean. A sample of 20 engineering majors had a mean GPA of 2.65. Test the professor's claim at the 0.01 level of significance by:

i. Stating the hypothesis [2 Marks]
ii. Finding the critical value [5 Mark]
iii. Computing test statistic [6 Marks]
iv. Making decision [2 Marks]

QUESTION FIVE

The following are the kilometres per litre which a test driver got for ten tankfuls each of three kinds of gasoline:
Gasoline A 30, 41, 34, 43, 33, 34, 38, 26, 29, 36
Gasoline B 39, 28, 39, 29, 30, 31, 44, 43, 40, 33
Gasoline C 29, 41, 26, 36, 41, 43, 38, 38, 35, 40.
Use the Kruskal-Wallis test at the level of significance $a = 0.05$ to test the null hypothesis that there is no difference in the average kilometre yield of the three types of gasoline. [15 Marks]