KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF THE
DEGREE OF MASTER OF ARTS IN GEOGRAPHY
SECOND SEMESTER, 2021/2022
(FEBRUARY - JUNE, 2022)**

GEOG 812: ADVANCED QUANTITATIVE METHODS

STREAM: Y1 S2   **TIME: 2 HOURS**

DAY: TUESDAY, 2:00 – 5:00 P.M.   **DATE: 26/05/2022**

INSTRUCTIONS
1. *Do not write anything on this question paper.*
2. *Answer Question ONE [Compulsory] and any other TWO Questions.*

QUESTION ONE
a. With specific features, differentiate between parametric and non-parametric tests.   (6 Marks)
b. Elaborate on the assumptions that have to be met before a student t-test could be applied.   (8 Marks)
c. State and explain the conditions for F-test statistic.   (6 Marks)

QUESTION TWO
A household switched from using a bath to using a shower and monitored their water consumption and their 10 months' consumption (in Kiloliters) is presented below:

Bath
32.8 31.9 36.6 35.6 36.1 29.8 34.5 34   39.9 33.4

Shower
30.5 28.6 31.6 31.7 32   33.2 29.6 32.9 31.5 30.1

At 0.05, test whether there is any significant difference in the variances of the two consumptions using the F-test. Round off all your answers to the nearest two decimal places. Use the closest degrees of Freedom, if the exact one is not there on the table.   (20 Marks)

QUESTION THREE
The following represent extract of students ages for the second and third years. Test whether there is a significant difference between the mean ages at 0.05 rejection level. (20 Marks)

First Years

| 18 | 26 | 24 | 18 | 21 | 23 | 18 | 20 | 22 | 24 | 17 | 24 | 26 |

| 26 | 18 | 28 | 23 | 23 | 17 | 22 | 20 |

Second Years

| 28 | 23 | 24 | 29 | 30 | 23 | 28 | 32 | 22 | 22 | 24 | 19 | 24 |

| 22 | 22 | 30 | 26 | 21 | 23 | 28 | 25 |

QUESTION FOUR
The following is an extract of a student marks from a set of subjects. Test whether there is any significant difference between the expected marks and the marks that the students scored. (20 Marks)

Subject number	Marks obtained	Expected Mark
1	42	50
2	41	52
3	50	50
4	60	66
5	58	60
6	65	78
7	60	50
8	62	65
9	54	65
10	90	65
11	65	70
12	81	78
13	45	50
14	32	55
15	45	60
16	90	78
17	52	50
18	65	60
19	85	90
20	48	50
21	58	60
22	50	50
23	59	60
24	47	50

25	65	70
26	23	50
27	32	50
28	40	55
29	56	60
30	48	50

QUESTION FIVE

a. Explains the advantages that Mann Whitney U-test has over the student t test. (4 Marks)

b. Outline and explain what you have the ensure that your data meets before you use Mann Whitney U-test as an analysis technique. (8 Marks)

c. Based on the following set of data tests if there is a difference in the rank of the two sets using Mann Whitney U-test at 0.05. (8 Marks)

Set 1	Set 2
3	9
4	7
2	5
6	10
2	6
5	8

QUESTION SIX

The following table presents depression scale

No exercise	Jogging for 40 minutes	Running for 20 minutes
23	22	59
26	27	66
51	39	38
49	29	49
58	46	56
37	48	60
29	49	56
44	65	62

Test if the three scales are significantly different by conducting a Kruskal Wallis test. (20 Marks)