EDCI 841

CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF MASTER OF SCIENCE
IN AGRICULTURAL EDUCATION**

EDCI 841: STATISTICAL METHODS IN EDUCATION

STREAMS: MSC (AGED)   **TIME: 3 HOURS**

DAY/DATE: WEDNESDAY 15/04/2020   **2.30 P.M. – 5.30 P.M.**

INSTRUCTIONS:
- **Answer question ONE and any other TWO**
- **Do not write on the question paper**

QUESTION ONE

(a) Distinguish between the following pair of terms as used in statistics

     (i) Discrete variables and continuous variables

     (ii) Descriptive statistics and inferential statistics

     (iii) Random variables and constant variables   [3 marks]

(b) Explain four levels of measurement   [8 marks]

(c) A sample of 400 male students is found to have a mean score of 65% in statistics exam. Can it be reasonably regarded as a sample from a larger population whose mean is 66% given that the test statistic |Z| critical = 1.96 at 5% level of significance   [3 marks]

(d) Describe the six steps followed when testing hypothesis   [6 marks]

QUESTION TWO

(a)   The raw scores from a statistics continuous assessment test are as follows:

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

Required:

(i)   Ungrouped frequency distribution table   [2 marks]

(ii)   Mean   [3 marks]

(iii)   Mode   [3 marks]

(iv)   Standard deviation   [4 marks]

(v)   Coefficient of variance   [2 marks]

(b)   Explain four factors that influence correlation coefficient   [4 marks]

QUESTION THREE

(a)   Explain five statistical characteristics of a normal curve   [10 marks]

(b)   Given the following values of x and y obtained from a research study

x	10	20	30	40	50	60
y	14	17	15	23	18	22

Use the information to generate a regression model   [10 marks]

QUESTION FOUR

(a)   The following data was collected from the control and experimental groups of a study.

By use of t-test and level of significance of $\alpha = 0.05$, determine whether the differences

between the two groups mean is significance.

Control	2.0	1.0	1.2	1.4	2.0	1.2	1.4	1.6	1.2	1.0
Experimental	1.4	0.6	1.0	1.4	1.6	0.8	1.0	1.2	0.6	0.4

[6 marks]

(b)   A coin was tossed 10 times and the outcomes were 7 heads and 3 tails. Test the hypothesis that the probability of obtaining head is the same as that of obtaining a tail. Take $X_{cr}^2 = 3.84$ at $\propto = 0.05$ significance level).   [6 marks]

(c)   In a beauty context, the different adjudicators ranked the same 10 participants in the following ways

1st Adjudicator (x)	1	2	3	4	5	6	7	8	9	10
2nd Adjudicator (y)	2	4	6	8	1	5	3	9	7	10

(i)   Determine the spearman's rho (ρ) correlation coefficient   [6 marks]

(ii)   Draw the conclusion   [2 marks]

QUESTION FIVE

(a)   Six students from four schools X, Y, Z & W participated in a statistics competition. Determine whether there is significant difference in the performance at a significance level of $\propto = 0.05$ from the following results

X	Y	Z	W
5	8	7	7
7	7	9	6
5	6	6	6
7	7	7	7
8	7	8	7
7	8	6	6

Provided $F_{[0.05. \ (3,20)]} = 3,10$ [14 marks]

(b)   Explain the importance of studying statistics on an MSC AGED students   [6 marks]