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**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

 **UNIVERSITY EXAMINATIONS 2014/2015**

**YEAR III SEMESTER I SPECIAL/SUPPLIMENTARY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN PUBLIC HEALTH**

**MLS 2330: BIOSTATISTICS**

**DATE: AUGUST 2015 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE**

1. Explain the importance of biostatistics to a public health officer. [3 marks]
2. Describe the steps taken in analyzing raw data in research. [3 marks]
3. The probability of being attended by a doctor without delay is 1/5. Find the probability that 2 people randomly selected will see the doctor without delay. [4 marks]
4. In statistical analysis, distinguish between type I and type II error. 3 marks]
5. Give the assumption of regression analysis. [3 marks]
6. Discuss the differences between measures of central tendency and measures of dispersion. Use the knowledge to find the median of 2.1, 3.6, 2.0, 1.8, 8.3, 1.0 [6 marks]
7. Discuss the following statistics;

(i) Wilcoxon test

(ii) Chi-square test

(iii) Kruskal-wallis test

(iv) Man whitney U test [8 marks]

**QUESTION TWO (20 MARKS)**

A researcher wishes to investigate the response of what growth to different fertilizer application levels (in g/m2) The following growth rates are recorded after two weeks in centimeters.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fertilizer dosage (g/cm2) | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| Growth (Cm) | 12.5 | 16.5 | 18.2 | 21.3 | 24.4 | 26.3 | 27.1 | 28 |

1. Determine whether there was a linear relationship between dosage and growth.
2. Compute the cogression model and use it to predict growth when fertilizer dosage is 38 g/m2

**QUESTION THREE (20 MARKS)**

In a medelian genetic experiment the following eye colours were obtained for drosophila cases

|  |  |
| --- | --- |
| SexMaleFemale | Eye Colour |
| Black  | Brown  | Red |
| 2953 | 4668 | 1018 |

1. Determine whether eye colour is independent of sex [16 marks]
2. Why and under what circumstances is the chi-square test used? State the hypothesis. [4 marks]

**QUESTION FOUR (20 MARKS)**

The following are weights (in Kg) of randomly studies children aged 6 years from four different hospitals:

H1: 16 20 18.1 19.2 20.4 16.5

H2: 17.2 19.2 19.2 22.4 17.9

H3: 14.5 16.8 17.3 15.5 14.3 14.6

H4: 15.9 21.3 18.2 16.2 18.2

Test whether the weights of the children differ significantly between the four hospitals.

**QUESTION FIVE (20 MARKS)**

A biologist was investigating the number of eggs laid by two hen groups.

Group 1: 1 10 11 12 10 14 9 7

Group 2: 2 9 6 11 11 8 6

Test whether the variances of the two samples are equal and determine whether the mean number of eggs is different for the two groups.