UNIVERSITY OF RUHUNA

BACHELOR OF SCIENCE (GENERAL) DEGREE EXAMINATION – August / September 2017

LEVEL I SEMESTER I

COURSE UNIT : BOT 1121 (Scientific Approach and Biometrics)

Time: **One hour.**

Index No.:.....

Answer two questions including the first question.

1) i) Write the main steps in the scientific method.

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ii) List three measures which are used to describe the central tendency of a collected data set.

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iii) What do you mean by the following terms used in Biometrics?

a) Population

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b) Sample

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c) Significant difference

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iv). Name commonly used four sampling techniques, used to get unbiased samples.

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v) Give the meanings of each letter in the following equation.

$$t = \frac{(X_i - \overline{X})}{S}$$

t = ...

X_i = ...

$\overline{X}$ =.....

S = ...

vi) What is the use of above mentioned equation in biometrics?

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vii) Name two major uses of Chi-square (χ^2) test

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2) Assume that you are given a practical assignment to test the four different levels of a organic fertilizer (A, B, C, D) on the yield of newly developed rice variety through an experiment conducted in a field according to a completely randomized design (CRD).

i) Write two advantages of applying completely randomized design (CRD).

ii) Give the completed ANOVA table in symbolic form explaining all the terms used.

iii) Write the null hypothesis to be tested?

iv) Write the major steps of the procedure that you would follow to determine whether the null hypothesis can be accepted or not.

3) In a nematological study, nematodes were isolated from spinach plants and counted by using a counting chamber with 60 squares. Number of nematodes in a square (x) and observed number of squares with that particular number of nematodes (fx) were recorded.
Assuming that you are the student who conducted the above mentioned research, answer the following questions.

i) Briefly explain the relevance of the poisson distribution for the recorded data.

ii) What are the characteristic features of the poisson curve?

iii) Briefly describe how you would determine whether there is a significant compatibility of distribution of nematodes in squares of counting chamber with the poisson model.