Uva Wellassa University
Faculty of Animal Science and Export Agriculture
BSc in Export Agriculture
BSc in Palm & Latex Technology and Value Addition
BSc in Tea Technology and Value Addition
BASc in Animal Science
BSc in Aquatic Resource Technology

Uva Wellassa University

End Semester Examination July / August 2016
Year III Semester I

Applied Statistics in Agriculture (EAG 301-3)

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Instructions
Answer **All** Questions
No. of Questions : Three (03)
No. of Pages : Two (02)
Marks Allocated : 50%
Time : One and half hours (1 ½ hrs)
Scientific calculators are allowed

PART II – ESSAY

Question 01

1.1 The net weight of a "Nilwala" tea bag follows a Normal distribution with mean of 2 g and standard deviation of 0.1 g. If net wet of a tea bag is less than 1.75 g or greater than 2.25 g, the tea bag was considered as nonconforming product in quality control process.

1.1.1 Find the probability of producing a nonconforming tea bag in this process.

(05 marks)

1.1.2 In order to maintain the quality of product, hourly ten tea bags were selected randomly. If more than 2 nonconforming tea bags were found within randomly selected 10 tea bags, production will be stopped and necessary adjustments will be taken to maintain the quality of the product. If the probability of producing a nonconforming tea bag is 0.01, what is the probability of the process being stopped to maintain the quality of production?

(05 marks)

1.1.3 According to the finding of Medical Research Council, four percent (4%) of cows are suffering from foot-and-mouth disease (FMD). A doctor has developed a test to identify the FMD infected cows with 90% accuracy. With experience, he realized that only 86% of healthy cows show negative results for the test. What is the probability of indicating positive results for the test

(05 marks)

27

Question 02

2.1 Why is statistics important in field of Agriculture? Explain with appropriate examples. (05 marks)

2.2 An experiment is being conducted to test the physical fitness of older people. A physical fitness test is given to each 10 subjects (a higher score represents greater fitness). Each subject's fitness score for test is recorded as value "Y" and age as value "X" (ages are between 40 and 80 years). Summary of data set is given below

$$\sum_{i=1}^{10} X_i = 581 \quad \sum_{i=1}^{10} X_i^2 = 37{,}193 \quad \sum_{i=1}^{10} Y_i = 607 \quad \sum_{i=1}^{10} Y_i^2 = 38{,}795 \quad \sum_{i=1}^{10} X_i Y_i = 33{,}426$$

2.2.1 Calculate the average of fitness score and age of an older person. (02 marks)

2.2.2 Find the Pearson correlation coefficient between age and fitness score. (07 marks)

2.2.3 Comment on the calculated correlation coefficient (Consider both sign and magnitude). (03 marks)

Question 03

3.1 What are the differences between independent sample and dependent sample? (03 marks)

3.2 Compare Parametric tests and Nonparametric tests under similarities and dis similarities. (05 marks)

3.3 To test the effect of certain drug, a scientist selected 5 patients and treated them. After 2, 4 and 6 hours, he measured the percentage of certain chemicals in blood. With necessary hypothesis check whether there are any significant changes in percentage of chemical with respect to time (Hint: Use a Nonparametric test) (10 marks)

Patient	After 2 hours	After 4 hours	After 6 hours
1	5	8	8
2	6	5	4
3	4	2	2
4	4	4	4
5	7	3	2

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