UVA WELLASSA UNIVERSITY OF SRI LANKA
FACULTY OF ANIMAL SCIENCE & EXPORT AGRICULTURE

BSc in Export Agriculture
Third Year Second Semester Examination – December/January 2016/17

Econometrics (EAG 330-2)
Section II – Essay Questions

Instructions:
Answer **all** questions.
No. of questions : Two (02)
No. of pages : Three (03)
Time : One (01) hour
Total marks allocated : 60%

1.

(I) Discuss the demerits of the followings; use simple examples where necessary (20 marks)

a) Arithmetic mean
b) Sum of the product
c) Covariance
d) Karl Pearson Product movement co-relation coefficient

(II) What is meant by standard deviation? (10 marks)

(III) Briefly explain the following in relation to a data set (30 marks)

a) The normal distribution
b) The 68 – 95 – 99.7 rule
c) Standardizing and Z-score

(IV) Number of animals in 84 buffalo herds in Hambantota District is given below.

01	01	01	02	02	02	02	02	02	03	03	03
04	04	04	04	04	04	04	05	06	07	08	09
13	14	14	15	15	16	17	17	17	18	18	18
09	09	09	10	10	10	10	10	11	11	11	13
18	19	20	20	21	22	22	22	23	24	25	26
27	28	28	28	29	30	30	30	31	31	31	31
35	40	47	52	56	61	67	73	75	80	84	90

a) Find mean, median and mode of the data set. (12 marks)

b) Find variance, standard deviation and coefficient of variance of the data set. (12 marks)

c) Find the IQR of the data set using a stem and leaf diagram. (6 marks)

d) Find whether there are any outliers using a box and whisker plot. (5 marks)

e) What are the reasons to exist outliers? (5 marks)

2.

(I) Hypothetical data on weekly family consumption expenditure *Y* and weekly family income *X* are given in the following table.

***Y*(Rs. 00')**	***X* (Rs. 00')**
70	80
65	100
90	120
95	140
110	160
115	180
120	200
140	220
155	240
150	260

a) Estimate the regression equation. (40 marks)

b) Interpret the results. (20 marks)

c) What would be the weekly consumption if the income of the family is Rs.19000? (10 marks)

(II) To estimate the relationship between timber volumes which can be harvested from mahogany forest plantation, following model was used.

$$Y = \alpha + \beta_1 X + \beta_2 X^2$$

Where;

Y is the timber volume per hectare (m^3)

X is the number of years after planting trees.

Output of the above regression analysis is given below

VARIABLES	COEFFICIENT	STD ERROR	STUDENT'S T	P
CONSTANT	-579.164	277.771	-2.09	0.0501
X	703.233	53.3231	13.19	0.0000
X^2	-18.6335	2.15722	-8.64	0.0000

R-SQUARED 0.9598 RESID. MEAN SQUARE (MSE) 164831

ADJUSTED R-SQUARED 0.9557

SOURCE	DF	SS	MS	F	P
REGRESSION	2	7.863E+07	3.932E+07	238.53	0.0000
RESIDUAL	20	3296616	164831		
TOTAL	22	8.193E+07			

a) Justify the suitability of the model. (10 marks)

b) Estimate the timber volume of one hectare of lands after 15 years of planting trees. (10 marks)

c) To obtain the maximum timber volume, what is the best time to harvest? (10 marks)

[End of the Section II]