Uva Wellassa University
Faculty of Animal Science & Export Agriculture
BSc in Export Agriculture

End Semester Examination September/October 2013
Year III Semester II

Uva Wellassa University

Econometrics EAG 330 -2

Instructions
Answer **all** the questions

No. of questions : Five (05)
No .of pages : Four (04)
Time : Two hours (02 hrs)
Total marks allocated: 100%

Question 01

I. An inspector visits a large company to check their vehicles. The company has 4 large-load vehicles, 136 light vans and 21 cars. The inspector decides to sample 10% of the vehicles. Each type of vehicle is to be represented in the sample.
   a. What is this kind of sampling procedure called? **(02 marks)**
   b. How many of each type of vehicle should be inspected? **(06 marks)**

II Below table shows the data about tea land extent and income of small holders collected by a researcher.

Land Extent (acres)	1	1.5	2	1	3	2	4	2.5	1	2
Tea Income (000 Rs)	15	18	25	10	30	22	40	30	10	24

Determine the relationship between tea land extent and tea income of small holders.
(12marks)

Question 02:

I. Explain following terms. **(02 marks × 3)**

a. Inferential Statistics
b. Ordinary Least Squares (OLS) method
c. Dummy Variables

II Assume that you are estimating the following regression model:

$$Yi = \beta_0 + \beta_1 Xi + \beta_2 Zi + ui$$

When you estimate the above model you find that the correlation of X and Z is 0.7.

a. Give the name of this problem, which is frequently encountered in econometrics. **(02 marks)**

b. What are the symptoms of this problem? **(06 marks)**

c. Give three (03) solutions for this problem. **(06 marks)**

Question 03

I. Average paddy yield of farmers in Kurunegala district is 4000kg/ha. Twenty five farmers from kurunegala district are selected and given a new fertilizer mixture by Rice Research & Development Institute. Their average yield and standard deviation were 4200kg/ha and 100 respectively.
Test whether the new fertilizer mixture has increased the paddy yield. **(08 marks)**

II Sigma Marketing (pvt) Ltd has launched island wide sales promotion campaign to increase the sales of herbal tea product. The sales volumes of ten different cities, before and after the sales promotion campaign are as follow.
Test the effectiveness of this sales promotion campaign. **(12 marks)**

Name of the city	A	B	C	D	E	F	G	H	I	J
Sales volume before the promotion	5500	6000	4400	5000	4800	6000	5700	5000	5000	6200
Sales volume after the promotion	5000	5700	4400	5200	5000	5500	5500	4800	5000	6100

Question 04

The following model is a simplified version of the multiple regression model used in Biddle and Hamermesh (1990) to study the trade-off between time spent sleeping and working and to look at other factors affecting sleep:

I.

$$sleep = \beta 0 + \beta 1 totwork + \beta 2 educ + \beta 3 age + u$$

Where, sleep and *totwork* are measured in minutes per week and *educ* and *age* are measured in years.

a. If adults trade off sleep for work, what is the sign of β1? **(02 marks)**

b. What signs do you think β2 and β3 will have? **(04 marks)**

II Using the data, the estimated equation is;

$$sleep = 3638.25 - 0.148 totwork - 11.13 educ + 2.20 age$$

Where n = 706, $R^2 = 0.113$.

a. If someone works five more hours per week, by how many minutes is sleep predicted to fall? **(03 marks)**
b. Discuss the sign and magnitude of the estimated coefficient on *educ*. **(04 marks)**
c. Would you think *totwork, educ* and *age* explain much of the variation in sleep? (Hint: use R^2 value) **(03 marks)**
d. In addition to above factors, suggest two other factors might affect the time spent sleeping? **(04 marks)**

Question 05

Consider the following regression equation:

$$ADOPNL = \beta_0 + \beta_1 LAE + \beta_2 AWN + \beta_3 LBAV + \beta_4 WEXP + \beta_5 CNAG + \beta_6 OWNTYPE\ 1 + \beta_7 OWNTYPE\ 2 + \varepsilon i$$

Where, β_0 to β_7 = coefficient, ε_i = error term

ADOPNL	-	Adoption for new technology (%)
LAE	-	Land extent (acres)
AWN	-	Awareness of the Manager on new technology (dummy)
LBAV	-	Labor availability (dummy)
WEXP	-	Working experience of the manager (years)
CNAG	-	Contacts with the agro chemical companies (dummy)
OWNTYPE 1	-	Ownership type 1 - State ownership (dummy)
OWNTYPE 2	-	Ownership type 2 - Company ownership (dummy)

The estimation results are in the table below.

Variable	Coefficient	Standard Error Coef.	Sig Value
Constant	44.247	4.122	0.000
LAE	-0.02187	0.01553	0.173
WEXP	0.7554	0.3252	0.030
AWN	12.063	2.453	0.000
CNAG	-0.010	2.434	0.997
OWNTYPE 1	2.551	2.797	0.372
OWNTYPE 2	16.153	4.404	0.001
LBAV	0.460	2.259	0.841

R-Sq = 90.5 %

I. Write down the prediction equation. **(02 marks)**

II. According to the estimation results, what factors significantly affect for adoption of new technology **(02 marks ×02)**
   a. At 1% significant level
   b. At 5% significant level

III. Discuss the effect of land extent and working experience of manager on adoption of new technology.**(06 marks)**

IV. Suggest new method to measure the awareness level, other than use of dummy variable. **(04 marks)**

V. Do you think controller variables in this model explain much of the variation in adoption level? Explain your answer. **(04 marks)**