



Answer ALL Questions

Time allowed: 02 hours

- 01) a) What are the analytical tools used in econometrics?
- b) How can these tools be used in agricultural economics? Explain with two appropriate examples.
- c) What do you understand by cross sectional and transitional data?
- d) What are the different kinds of variables that you have learned? Give two examples for each of them.

02) The model summary and ANOVA table details of a simple regression analysis is shown below.

**Regression results**

**Model Summary**

Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.485(a)	.235	.230	63006.107

a Predictors: (Constant), AgLand

**ANOVA**

Model	Sum of squares	df	Mean square	F	Sig.
Regression	191747559599.768	1	191747559599.768	48.302	.000
Residual	623253814359.232	157	3969769518.212		
Total	815001373959.001	158			

a Predictors: (Constant), AgLand

b Dependent Variable: farm income

- a) i) Write down the mathematical model used for the above regression.
- ii) Interpret the  $R^2$  value shown here.
- iii) How **adjusted  $R^2$**  differs from the  $R^2$  value.

- b) i) What are the two sources of variation shown in the ANOVA table?
- ii) Which of these parts show variations accounted by the model?
- iii) Interpret the regression and residual sums of squares shown here.
- iv) What can you say about the model built here?

03) The following table shows the results of multiple regression analysis to examine the effect of different independent variables on non-farm income.

Determinants of non-farm income: OLS regression results		
Independent variables	Coefficient	Sig
Distance to market	0.008	0.15
Fruits and vegetables acreage	-0.007	0.03
Attended high school	-0.129	0.32
Age	0.074	0.00
Dependency ratio	-0.164	0.00

( $P < 0.05$ )

- i) Write down the estimated equation for the above model.
  - ii) Interpret the effects of each independent variable on non-farm income.
- 04) The following are the tests and examinations to check whether the given data violates the assumptions of linear regression analysis. Interpret the results given below.
- i) Durbin Watson test value was 1.09.
  - ii) Error variance increases for all levels of independent variables.
  - iii) Correlation co-efficient value between Y and  $x_1$  is lesser than  $x_1$  and  $x_2$ .
  - iv) Sixty three percent of the data points fell between the interval of mean  $\pm$  one Standard Deviation. ( Mean  $\pm$  1SD)