

M.A./M.Sc. 3rd Semester Examination, 2023

ECONOMICS

PAPER — ECO-301(A & B)

Full Marks : 50

Time : 2 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

PAPER — ECO-301(A)

(Econometrics-I)

GROUP—A

Answer any two questions : 2×2

1. Show that adjusted R -square is the linear non-proportional transformation of R -square of the form

$$(\text{adjusted } R\text{-square}) = a + b * (R\text{-square}).$$

2. State the main consequences of the violation of the normality assumption of the disturbance term.
3. Define partial correlation of a regressor (X_1 or X_2) with the regressand (Y) in the linear multiple regression of Y on X_1 and X_2 .
4. What do you mean by enhancement-synergism (ES) ?

Answer any two questions : 4×2

5. What do you mean by the assumption of non-stochastic regressors ? What is the relevance of the assumption.
6. Show that the disturbance term in the simple linear regression of $e_{Y.2}$ on $e_{1.2}$ is same as that in the linear multiple regression of Y on X_1 and X_2 .

7. Compare and contrast adjusted R-square (Theil) and F-statistic as measures of goodness of fit in linear multiple regression model.
8. The values of R-square in the regression of Y on X1, Y on X2 and Y on X1 and X2 are 0.50, 0.70 and 0.90 respectively. Evaluate the values of squared partial and ortho-partial correlations of these two explanatory variables.

Answer any one question : 8×1

9. Define sampling error. Evaluate the sampling error of the estimated coefficient of $e_{1.2}$ in the simple regression of Y on $e_{1.2}$.
10. From the following three regression results based on 16 observations, evaluate the roles of the two explanatory variables (X_3 and X_5) in explaining the variability of the explained variable (Y).

Results for regression of Y on X_3 and X_5

	Coefficients	Standard Error	t-Stat	P-value
Intercept	-135.3255	3487.9913	-0.0388	9.70E-01
	-1.1151	0.2528	-4.4103	7.04E-04
	0.5877	0.0340	17.3029	2.34E-10

R Square	Adj. R Square	Standard Error	F-Stat	P-value
0.9689	0.9641	665.3529	202.4577	1.60E-10

Result for regression of Y on X_5

	Coefficients	Standard Error	t-Stat	P-value
Intercept	59286.36	2882.29	20.57	7.35E-12
	1.89	0.87	2.17	4.73E-02

R Square	Adj. R Square	Standard Error	F-Stat	P-value
0.2525	0.1991	3142.94	4.73	4.73E-02

Result for regression of Y on X_3

	Coefficients	Standard Error	t-Stat	P-value
Intercept	8380.67	4422.43	1.90	7.89E-02
	0.48	0.04	12.90	3.69E-09

R Square	Adj. R Square	Standard Error	F-Stat	P-value
0.9224	0.9168	1012.98	166.30	3.69E-09

GROUP-B

Answer any two of the following questions :
2 × 2

11. Define likelihood function.
12. Point out the assumptions to be used in carrying out the Chow test.
13. What do you mean by linearity in CLRM ?
14. What is dummy variable trap ?

Answer any two of the following questions :
4 × 2

15. Derive the maximum likelihood estimator for σ^2 in a K variable CLRM.
16. Derive the Ordinary Least Square estimators for a 2 variable CLRM.

17. Discuss the advantages of dummy variable approach over the Chow test.

18. Frame a multivariate regression model involving dummy variables for a monthly data set to capture the effect of seasonality. Interpret the result of the dummy variable regression model with the help of a suitable example.

2 + 2

Answer any **one** of the following question :

8 × 1

19. Derive the restricted maximum likelihood estimator of the slope parameters in a K variable CLRM. Check whether it is unbiased or not.

5 + 3

20. What do you mean by structural break? Discuss Perron (1989) model of exogenous structural break.

2 + 6

[Internal Assessment – 10 Marks]

PAPER – ECO-301(B)
(Agricultural Economics-I)

GROUP – A

Answer any **two** of the following questions :
 2×2

1. How does industrial development change the mode of agricultural production ?
2. What do you mean by forced commerce in the pre-capitalist agrarian system ?
3. What are the different kinds of risks that farmers usually face ?
4. How are 'peasants' different from 'farm enterprises' ? Explain.

Answer any **two** of the following questions :
 4×2

5. What are the basic conditions of generating own rate of interest in the market of agricultural produce ? Explain.

6. What were the changes that occurred in the pattern of land use with the commercialisation of agriculture, particularly in terms of land size and cropping intensities? How did the demographic profile of the rural economy change? 2 + 2
7. Discuss the effect of a rise in the consumer-worker ratio on the equilibrium of a drudgery-averse peasant.
8. What are the basic problems that we face in estimating the peasants' efficiency?

Answer any **one** of the following question : 8×1

9. Differentiate between integrated farming system and commercialised system of agriculture. What are the policy implications of the commercialised system of agriculture? How is population growth related to the speed of agrarian commercialisation? 2 + 4 + 2

10. Write down the stationary equilibrium forms of cash and kind of a peasant operating under pre-capitalist regime. Derive the expression for marketable surplus and explain its slope with respect to class size intuitively.

8

GROUP-B

Answer any two of the following questions :
2 × 2

11. What is the potential risk in the credit market? Suggest one solution to mitigate this risk.
12. What are the three pillars of A-o-A?
13. What are the different forms of contract farming?
14. What do you mean by individual-based and area-based agricultural insurance policies?

Answer any **two** of the following questions :
4 × 2

15. What is reservation utility ? Define PWC (per worker cost) to a producer where labour and credit markets are interlinked.
16. Explain the weather-based insurance scheme.
17. What are green-box and amber-box subsidies ?
18. Discuss the role of government in the context of contract farming.

Answer any **one** of the following question :
8 × 1

19. How can you explain the concept of disguised unemployment in the model of interlinkage ? Is it possible to explain the zero rate of interest in the rural credit market within this framework ?
6 + 2

20. Identify the benefits of FDI in retail agri-business in a developing country. Is there any cause of concern ? Discuss.

4 + 4

[Internal Assessment — 10 Marks]
