PG/IIIS/ECO/302(A & B)/23 (New)

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

ECONOMICS

PAPER – ECO-302(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-302(A)

(*Econometrics*-II)

GROUP–A

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

1. Mention the conditions for stationarity of a time series.

2. Why is "Unit root process" termed as unit root ?

3. What is meant by the 'spurious regression' problem ?

4. Explain the meaning of ARIMA (2, 1, 2).

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

5. What is autocorrelation function (AFC) ? Explain how the correlogram is used to understand the stationarity of time series. $2 + 2$

6. What is random walk model ? How does the random walk model with drift differ from the random walk model without drift ? Explain. $1 + 3$

7. Distinguish between the trend stationary and difference stationary. In this context explain the meaning of over-differencing and under-differencing.

8. Distinguish between the autoregressive (AR) and moving average (MA) processes.

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

9. What is cointegrated series ? Briefly discuss "Error Correction Mechanism". Why do we need ECM even though we have "Granger theorem" ? $2 + 4 + 2$

10. What are distributed lag models of expectation ? Discuss the weightage procedure of the distributed lag models of adaptive expectation. $2 + 6$

GROUP – B

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

11. Distinguish between within-group and between-group variations in panel data and explain the significance of this distinction.

12. Compare and contrast the Fixed Effect Model (FEM) and Random Effect Model (REM) in panel data analysis.

13. Illustrate with an example how unbalanced panel data can be transformed into balanced panel data.

14. Discuss the implications of individual effects in Fixed Effect Model (FEM).

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

15. Define individual heterogeneity in the context of panel data. Provide an example to show how panel data regression models control this heterogeneity.

16. Describe the process of estimating parameters in the Fixed Effect Model (FEM).

17. Define Panel Co-integration Test and differentiate between Panel VAR and Panel VECM models.

18. Briefly explain LM test, Restricted F-test, and Hausman test. How are these tests used to select the appropriate panel data regression model ? Explain.

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

19. Demonstrate that in Panel Data Regression Models the estimated coefficient of an explanatory variable is a weighted sum of within-group and between-group estimators.

20. Calculate the Variance-Covariance Matrix of disturbance terms in the Random Effect Model (REM). Subsequently explain the estimation of REM parameters using the Generalized Least Squares (GLS) method. $5 + 3$

[Internal Assessment – 10 Marks]

PAPER – ECO-302(B)

(*Agricultural Economics*)

GROUP–A

Answer any **two** questions : 2×2

1. What do you mean by efficiency ?

2. What is inclusive growth in Indian agriculture ?

3. Write any two policy suggestions for achieving growth with equity in Indian agriculture.

4. What is seasonal food insecurity ?

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

5. What are the different policies that should be taken to improve Indian agriculture ?

6. Discuss the challenges of diversification for achieving growth with equity in Indian agriculture.

7. Discuss briefly the different dimensions of food security.

8. What are hunger and malnutrition ?

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

9. Discuss the debates on the relationship between farm size and productivity in Indian agriculture.

10. Discuss briefly the management of food grains in Indian agriculture.

GROUP–B

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

11. Suppose an income dependent utility function of a farmer is given as $U = U(y)$. Give the expressions for absolute risk aversion and relative risk aversion. 1 + 1

12. Suppose agricultural production system uses three inputs, labour, capital and irrigation services, where the last one is the only institutional factor. Also suppose that the rate of growth of agricultural output is 9% , growth of labour is 4.5% and growth of capital is 2.5%. Derive the impact of the irrigation services when labour and capital respectively hold 40% and 30% shares in the total production.

13. Calculate the expected return to a farmer when he gets Rs. 10000 of return from producing a particular crop under good state of nature with probability 0.7 and Rs. 5000 of return under bad state of nature with probability 0.3.

14. If $E(x^2) = 500$ and $E(x) = 12$, 'x' being the quantity of a crop, find out the variance of the crop production.

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

15. Mention major impacts of technological and institutional transformations in Indian agriculture that happened during the mid-sixties.

16. Suppose a big sized farmer faces the following probability distribution over making a choice between production of two crops A and B.

Crops	States of the nature	Probability	Quantity of output in quintals
A (Cereals)	Good	0.3	180
	Medium	0.4	160
	Bad	0.3	140
B (Pulses)	Good	0.3	190
	Medium	0.4	160
	Bad	0.3	130

Determine which crop will be beneficial for the farmer to produce in order to minimize risk.

17. Suppose production function of the agriculture sector is of the form

$$Y = \gamma L + \theta K + \lambda L^2 + \varphi K^2.$$

Find out the shape of the ridge lines of labour and capital.

18. Define Yield Rates. Give an overview of the trends of yield rates in Indian food grains in the post-independence phase. 1 + 3

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

19. Explain the growth accounting approach to calculate the total factor productivity growth for the agricultural sector incorporating public irrigation as one of the institutional factors besides traditional labour and capital inputs. Mention the condition when the contribution of the irrigation facility will be zero. 6 + 2

20. Explain how the quantity of land use in modern practice is affected by risk aversion of the farmers and size of the farm. In this context explain the effect of farm size upon the amount of land to be used for modern farming practices. 5 + 3

[Internal Assessment — 10 Marks]