 PG/IIIS/ECO/302(A&B)/24

M.A./M. Sc. 3rd Semester Examination, 2024

ECONOMICS

PAPER – ECO-302 (A & B)

Full Marks : 50

Time : 2 hours

Answer **all** questions

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. Define Moving Average process of generating a time series.

2. Distinguish between stationary and non-stationary process.

3. What is the autocorrelation function (AFC) ?

4. What is distributed lag models of expectation ?

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

5. What is meant by spurious regression problem ? When does such problem arise ? $2 + 2$

6. What is meant by cointegration ? Explain the Engel-Granger test between two-time series variables. $1 + 3$

7. Write a short note on Augmented Dickey Fuller test.

8. State the properties of autoregressive (AR) process. Explain the meaning of (2,1,2). $3 + 1$

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

9. What do you mean by stationarity of a time series ? Check the stationarity of the following stochastic process and explain the result : $Y_t = \alpha + \beta Y_{t-1} + \gamma t + \varepsilon_t$, where ε_t is a white noise error term and t is the time measured chronologically. $2 + 6$

10. Discuss the weightage procedure of the distributed lag models of expectation. Briefly explain the adaptive expectation model. $3 + 5$

GROUP–B

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

11. Define the concepts of within-group and between-group variations in a panel data.

12. In what scenario is the Fixed Effects Model (FEM) preferable to the Random Effects Model (REM) ?

13. Distinguish between one-way and two-way classification models in panel data analysis.

14. State and explain the theorem of partial regression.

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

15. Explain in brief the LM test, Restricted F test and Hausman test.

16. How do you select the appropriate panel data regression model ? Explain.

17. Estimate the Var-Cov Matrix of disturbance terms of REM.

18. What are the implications of Individual Effect in panel data regression model ?

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

19. Derive the FEM for a one-way classification and explain its estimation using the LSDV approach.

20. Prove that the OLS estimator (β) is the weighted sum of the within-group and between-group estimators in panel data analysis.

[Internal Assessment – 10 Marks]

PAPER – ECO-302(B)

(*Agricultural Economics*)

GROUP–A

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

1. What is transitory food security ?

2. What is inclusive growth in Indian agriculture ?

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

4. Why is management of food grain required ?

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

5. Discuss the relationship among poverty, hunger and malnutrition in the Indian context.

6. Briefly explain the problem of food insecurity in Indian agriculture.

7. What are the four dimensions of food security ? Explain each of them.

8. What are output-oriented and input-oriented technical efficiencies ? Explain.

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

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

10. Describe and comment on the relationship between farm size and productivity Indian agriculture.

GROUP–B

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

11. Consider the utility function of a farmer as $U = 2y^2 + 3y + 5$ (where y is income). Write down the expressions for absolute risk aversion and relative risk aversion. $1 + 1$

12. Suppose agricultural production system uses irrigation services as the only institutional factor besides labour and capital. Also, suppose that the rate of growth of agricultural output is 7.8%, growth of labour is 3.5% and growth of capital is 2.25%. Derive the impact of the irrigation services when labour and capital respectively hold 50% and 40% shares in the total production.

13. If $E(x^2) = 12500$ and $E(x) = 250$, 'x' being the quantity of a crop, find out the variance of the crop production.

14. Define total factor productivity growth in relation to the agricultural sector.

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

15. Analyse critically the major impacts of first and second generation green revolutions that have been taken place in Indian soil.

16. Suppose a big sized farmer faces the following probability distribution over making a choice between production of Paddy and Vegerables.

Crops	States of the nature	Probability	Quantity of output in quintals
Paddy	Good	0.3	280
	Medium	0.4	260
	Bad	0.3	240
Vegetables	Good	0.3	290
	Medium	0.4	260
	Bad	0.3	230

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 elasticity of output with respect to labour and draw the ridge line of labour. 2 + 2

18. Define Yield Rates. Make a note on the trends of yield rates in Indian food grains in the post-independence phase. 1 + 3

Answer any **one** of the following question : 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. Using a simple model explain how the quantity of land use in modern practice is affected by Risk Aversion of the farmer. In this context explain intuitively the effect of farm size upon the amount of land to be used for modern farming practices. 6 + 2

[Internal Assessment — 10 Marks]
