M.A./M.Sc. 3rd Semester Examination, 2022

ECONOMICS

(*Econometrics*-II/*Agricultural Economics*)

PAPER – ECO-302(A&B)

Full Marks : 40

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-302A

(*Econometrics*-II)

[*Marks* : 40]

GROUP – A

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

1. What does a 'unit root' mean ?

2. Distinguish between the white noise and the random walk series.

3. What is the autocorrelation function (AFC) ?

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

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

5. Indicate whether the following statement is true, false or uncertain and give brief explanations :
   The mean and variance of the random walk series without drift changes over time.

6. What is correlogram ? Exlain how the correlogram is used to understand the stationarity of the time series. $1 + 3$

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

8. Define ARIMA process. Explain the meaning of (2, 1, 2).

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

9. Distinguish between a series that is "difference stationary" and a series that is "trend stationary". Are shocks persistent in the latter ? State the properties of AR and MA.
$3 + 1 + 2 + 2$

10. What is distributed lag models of expectation ? Discuss the weightage procedure of the distributed lag models of expectation. Point out, when the adaptive expectation model corresponds to naïve expectation model ?
$2 + 3 + 3$

GROUP – B

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

11. What do you mean by within-group and between group variations of panel data ?

12. Distinguish between Fixed Effects Model (FEM) and Random Effects Model (REM).

13. Explain the terms in the context of panel data: Selectivity Bias and Attrition.

14. What are the implications of Individual Effect in FEM and REM ?

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

15. Explain in brief the LM test, Restricted F test and Hausman test. How do you select the appropriate panel data regression model ? $2+2$

16. What do you mean by Panel Co-integration Test ? Distinguish between Panel VAR and Panel VECM. $2+2$

17. Briefly discuss the estimation procedure of the parameters of FEM.

18. What do you mean by individual heterogeneity ? Explain with a suitable example how panel data regression model is able to control this heterogeneity.

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

19. In case of Panel Data Regression Model prove that the estimated coefficient of explanatory variable is the weighted sum of within group and between group estimators.

20. Estimate the Var-Cov Matrix of disturbance terms of REM. Find out the estimated parameters of REM by the GLS method. 5 + 3

PAPER—ECO-302B

(*Agricultural Economics*)

[*Marks* : 40]

GROUP – A

A. Answer any *two* from the following : 2 × 2

1. What do you mean by crop diversification ?

2. Identify some problems of food storage in India.

3. Mention any three major goals of agricultural development.

4. What is seasonal food security ?

B. Answer any *two* from the following : 4×2

5. What are the four main dimensions of food security ? Distinguish between chronic and transitory food security. 2 + 2

6. Discuss the challenge of inclusive growth in Indian agriculture.

7. What are the different dimensions of Indian agricultural sector that need support ?

8. Discuss briefly some policies that should be taken to improve Indian agriculture.

C. Answer any *one* from the following : 8×1

9. What do you mean by efficiency ? Discuss briefly its significance in explaining the relation between farm size and productivity in Indian agriculture.

10. How important is the crop diversification in improving Indian agricultural sector ?

GROUP – B

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

11. What do you mean by total factor productivity ?

12. Suppose an agricultural production system uses three inputs : (*i*) labour, (*ii*) capital and (*iii*) irrigation services as the only institutional factor. Also, suppose that the rate of growth of agricultural output is 12%, growth of labour is 5.5% and growth of capital is 3.5%. Derive the impact of the irrigation services when labour and capital respectively hold 60% and 40% shares on the total production.

13. Calculate the expected return to a farmer when he gets Rs. 2000 of return from producing a particular crop under good state with probability 0.6 and Rs. 1000 of return under bad state with probability 0.4.

14. If $E(x^2) = 200$ and $E(x) = 10$, 'x' being the quantity of a crop produced, find out the variance of the crop production.

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

15. Mention major impacts of technological and institutional transformation 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	Good	0.3	80
	Medium	0.4	60
	Bad	0.3	40
B	Good	0.3	90
	Medium	0.4	60
	Bad	0.3	30

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 $Y = \alpha L + \beta K + \gamma L^2 + \delta K^2$. 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 production in the post-independence phase. 1 + 3

F. 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. Explain how the quantity of land use in modren practice is affected by Risk Aversion of the farmers and Size of the Farm. Logically explain in this context the effects of Fixed Cost and Fertilizer price upon land use under modern technology farming. 6 + 2