No. of Printed Pages : 4 **REC–103**

Ph. D. (ECONOMICS)

(PHDEC)

Term-End Examination

June, 2026

REC-103 : ECONOMETRIC METHODS

Time : 3 Hours *Maximum Marks : 100*

Note : *Answer questions from both the Sections as directed.*

Section—A

Note : *Answer any **two** questions from this Section.* 2×20=40

1. (a) Explain the procedure of estimation of the parameters of the Cobb-Douglas production function given by

$$y = AK^{\alpha}L^{\beta}$$

(b) If the estimated equation is given by

$$\ln y = \underset{(1.7)}{1.5} + \underset{(0.15)}{0.37} \ln K + \underset{(0.25)}{0.81} \ln L$$

What do the coefficients in this equation reveal ?

(Figures in parenthesis indicate standard errors)

2. (a) What is meant by identification problem in a simultaneous equation model ?

(b) Find out the identification status of the following model

$$C_t = a_0 + a_1 Y_t + u_t$$

$$I_t = b_0 + b_1 Y_t + w_t$$

$$Y_t = C_t + I_t + G_t$$

(Endogenous variables : C, Y, I)

3. What is meant by stationarity in a time series. What are its implications ? Specify the steps to carry out any *one* test for stationarity.

4. What is meant by heteroscedasticity ? What are its consequences ? Explain any *one* method to remove the problem of heteroscedasticity.

Section—B

Note : *Answer any **five** questions from this Section.* 5×12=60

5. For a multiple regression model $y = x\beta + u$ prove that $\hat{\beta}$ is the best linear unbiased estimator (BLUE).

6. In a regression model :

   (a) Justify the need for inclusion of the error term.

   (b) Specify the classical assumptions concerning the error term.

7. What is meant by co-integration ? Explain how you will specify and carry out tests for co-integration.

8. Discuss the problem of multicollinearity. What are its remedial measures ?

9. Highlight the steps followed in the 2SLS method of estimation of parameters.

10. Explain the concept of autocorrelation in a dataset with examples for macroeconomics. How do you detect autocorrelation ?

11. Interpret the coefficient of determination. Bring out the difference between R^2 and adjusted-R^2 with illustration from any area of economics.

12. Write short notes on any *two* of the following :

(a) Dummy variable trap

(b) ARIMA models

(c) Confidence Interval

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