C 24253 (Pages : 4) Name.....

Reg. No.....

FOURTH SEMESTER M.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Econometrics

ECM 4C 12—TIME SERIES ECONOMETRICS

(2020 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

Part A (Multiple Choice Questions)

Answer **all** *questions.*

Each question carries a weightage of 0.20.

1. A test for a unit root that includes lagged changes of the variable as regressors is :
   (a) Breusch-Pagan Test.
   (b) Breusch-Godfrey Test.
   (c) Augmented Dickey-Fuller Test.
   (d) Durbin-Watson (DW) Statistic.
2. Auto Regressive Conditional Heteroskedasticity means :
   (a) A time series model whose current value depends linearly on its most recent value plus an unpredictable disturbance.
   (b) A model of dynamic heteroskedasticity where the variance of the error term, given past information, depends linearly on the past squared errors.
   (c) Both (a) and (b).
   (d) None of the above.

Turn over

3. A time series process with constant mean and variance where the covariance between any *two* random variables in the sequence depends only on the distance between them is called :

   (a) Covariance stationary.

   (b) Covariance.

   (c) Covariate.

   (d) None of the above.

4. The removing of the seasonal components from a monthly or quarterly time series is known as :

   (a) Detrending. (b) Data mining.

   (c) Data frequency. (d) Deseasonalizing.

5. ——— is a term used to describe the presence of an endogenous explanatory variable.

   (a) Endogenous sample selection.

   (b) Endogeneity.

   (c) Economic significance.

   (d) None of the above.

6. ——— is a time series model in first differences that also contains an error correction term, which works to bring two I (1) series back into long-run equilibrium.

   (a) Errors-in-Variables model.

   (b) Econometric model.

   (c) Error correction model.

   (d) None of the above.

7. Exponential smoothing is :

   (a) An econometric procedure used to correct for sample selection bias due to incidental truncation or some other form of non-randomly missing data.

   (b) A time series process where outcomes in the distant future are highly correlated with current outcomes.

   (c) Criteria for choosing forecasting models that are based on goodness-of-fit within the sample used to obtain the parameter estimates.

   (d) A simple method of forecasting a variable that involves a weighting of all previous outcomes on that variable.

8. In forecasting, a confidence interval for a yet unrealized future value of a time series variable is known as :

   (a) Forecast error. (b) Fixed effect.

   (c) Forecast interval. (d) None of the above.

9. The difference between an observed variable and the variable that belongs in a multiple regression equation :

   (a) Mean absolute error. (b) Mean error.

   (c) Mean squared error. (d) Measurement error.

10. A time series process whose joint distributions are pot constant across different epochs is called :

   (a) Stationary. (b) Non-stationary.

   (c) Normal distribution. (d) None of the above.

11. ——— a problem that arises when regression analysis indicates a relationship between two or more unrelated time series processes simply because each has a trend, is an integrated time series (such as a random walk), or both :

   (a) Spurious regression. (b) Spurious correlation.

   (c) Stochastic process. (d) None of the above.

12. A function of time that is the expected value of a trending time series process is called :

   (a) Top coding. (b) Time series process.

   (c) Time trend. (d) Trending process.

13. Data collected over time on one or more variables :

   (a) Panel data. (b) Pooled data.

   (c) Cross-sectional data. (d) Time series data.

14. The Box-Jenkins method is :

   (a) A mathematical model designed to forecast data ranges based on inputs from a specified time series.

   (b) It applies autoregressive moving average or autoregressive integrated moving average models to find the best fit of a time-series model to past values of a time series.

   (c) Both (a) and (b).

   (d) None of the above.

15. ——— measures the changes in the future responses of all variables in the system when a variable is shocked by an impulse.

   (a) Granger causality. (b) Impulse response function.

   (c) Vector autoregressive. (d) Smoothing technique.

(15 × 1/5 = 3 weightage)

Turn over

Part B (Very Short Answer Questions)

Answer any **five** *questions.*
Each question carries a weightage of 1.

16. What do you mean by time series analysis ?
17. Define Trend.
18. What do you mean by random variable ?
19. What is regression ?
20. Define normal distribution.
21. What do you mean by autocorrelation ?
22. Define Covariance.
23. What do you mean by estimation ?

(5 × 1 = 5 weightage)

Part C (Short Answer Questions)

Answer any **seven** *questions.*
Each question carries a weightage of 2.

24. Explain the utility of time series analysis.
25. Write a brief note on smoothing techniques.
26. Distinguish between stochastic and stationary process.
27. Explain the spurious regression.
28. Discuss the Box- Jenkins method.
29. Write a brief note on Granger causality test.
30. What do you mean by Co-integration ? Explain.
31. Write a brief note on Auto regressive models.
32. What do you mean by stochastic volatility ? Explain.
33. Briefly discuss multivariate analysis.

(7 × 2 = 14 weightage)

Part D (Essay Questions)

Answer any **two** *questions.*
Each question carries a weightage of 4.

34. Elaborate the classical time series decomposition models.
35. Explain the types of stationarity. Briefly discuss the tests to check stationarity.
36. Discuss the ARMA model. Briefly point out the difference between ARMA and ARIMA model.
37. Elaborate the different classical forecasting time series methods.

(2 × 4 = 8 weightage)