C 41738 (Pages : 4) Name.....

Reg. No.....

FOURTH SEMESTER M.A. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2023

(CBCSS)

Econometrics

ECM4C12—TIME SERIES ECONOMETRICS

(2020 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Part A (Multiple Choicc Questions)

Answer **all** *questions.*
Each question carries a weightage of 1/5.

1. ——— is a time series process where next period's value is obtained as this period's value, plus an independent error term.

   (a) Stochastic process. (b) Highly persistent process.

   (c) Random walk. (d) Sensitivity analysis.

2. Which among the following is not a component of time series data ?

   (a) Trend. (b) Seasonal.

   (c) Irregular. (d) None of the above.

3. A test for a unit root that includes lagged changes of the variable as regressors.

   (a) The Box Jenkins. (b) Augmented Dickey-Fuller Test.

   (c) Forecasting. (d) None of the above.

4. A statistic used to test for first order serial correlation in the errors of a time series regression model under the classical linear model assumptions is :

   (a) Durbin Watson. (b) Error variance.

   (c) Forecast Error. (d) Both (a) and (b).

5. In a time series data model, correlation between the errors in different time periods is known as :

   (a) Serially Uncorrelated. (b) Spurious correlation.

   (c) White noise. (d) Serial Correlation.

Turn over

6. A generalistion of random walk in which the change in the variable has a non-zero mean is called :

(a) Unit root.
(b) Stochastic process.
(c) Random walk without drift.
(d) Random walk with drift.

7. A highly persistent time series process where the current value equals last period's value, plus a weakly dependent disturbance is called :

(a) ARIMA.
(b) GARCH.
(c) Unit root process.
(d) Stochastic process.

8. An autoregressive integrated moving average is :

(a) A statistical analysis model that uses time series data to either better understand the data set or to predict future trends.
(b) A statistical model used in analyzing time-series data where the variance error is believed to be serially autocorrelated.
(c) Appropriate when the error variance in a time series follows an autoregressive (AR) model.
(d) None of the above.

9. Linear time series analysis :

(a) Provides a natural framework to study the dynamic structure of such a series
(b) The theories of linear time series discussed include stationarity, dynamic dependence, autocorrelation function, modelling, and forecasting.
(c) Offers an important guide to both parametric and nonparametric methods
(d) Both (a) and (b).

10. ———— is a statistical measure of the dispersion of returns for a given security or market index over a given period of time.

(a) Implied volatility.
(b) Historical volatility.
(c) Both (a) and (b).
(d) None of the above.

11. An impulse response function measures :

(a) The changes in the future responses of all variables in the system when a variable is shocked by an impulse.
(b) The changes in the present responses of all variables in the system when a variable is shocked by an impulse.
(c) The changes in the past responses of all variables in the system when a variable is shocked by an impulse.
(d) All the above.

12. GARCH is a :

(a) Statistical model that can be used to analyze a number of different types of financial data.

(b) Process allows lagged conditional variances.

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

(d) None of the above.

13. Statistical procedure for analysis of data involving more than one type of measurement or observation is called :

(a) Univariate analysis. (b) Bivariate analysis.

(c) Multivariate analysis. (d) None of the above.

14. Which among the following is true regarding error correction model ?

(a) It is a time series regression model.

(b) It is based on the behavioural assumption that two or more time series exhibit an equilibrium relationship that determines both short-run and long-run behaviour.

(c) The ECM was first popularized in economics by James Davidson.

(d) All the above.

15. The Box-Jenkins Model is a :

(a) Forecasting methodology using regression studies on time series data.

(b) The methodology is predicated on the assumption that past occurrences influence future ones.

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

(d) None of the above.

(15 × 1/5 = 3 weightage)

Part B (Very Short Answer Questions)

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

16. Define time series data.

17. What do you mean by seasonality ?

18. Define Regression.

19. What do you mean by random walk ?

20. What is unit root ?

21. What do you mean by correlation ?

22. Define forecasting.

23. What do you mean by non-stationary process ?

(5 × 1 = 5 weightage)

Part C (Short Answer Questions)

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

24. Explain the methods of measurement of trend.

25. Briefly discuss the additive and multiplicative models.

26. Describe the stochastic process in time series.

27. Briefly discuss Dickey - Fuller test.

28. Explain the relationship between cointegration and error correction model.

29. What do you mean by partial auto correlation function ? Explain.

30. Briefly discuss Granger causality test.

31. What is a White noise time series ? Explain.

32. Explain the economic application of ARIMA model.

33. Describe the Johansen Co-integration test.

(7 × 2 = 14 weightage)

Part D (Essay Questions)

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

34. Elaborate the smoothing techniques in time series data.

35. Briefly discuss the Augmented Dickey-Fuller test.

36. Discuss the Vector auto regressive (VAR) models.

37. Briefly discuss about the auto regressive conditional heteroscedasticity (ARCH) model and its application in finance.

(2 × 4 = 8 weightage)