THIRD SEMESTER M.A. DEGREE (REGULAR) EXAMINATION NOVEMBER 2021

(CBCSS)

Econometrics

ECM 3E 01—ANALYSIS OF ECONOMIC DATA USING COMPUTER SOFTWARE

(2020 Admission onwards)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

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Part A

Answer **all** *questions.*
Each bunch of **five** *questions carries a weightage of* 1.

1. ——————— is the correct extension of the Python file.

   (a) .py.   (b) .python.

   (c). p.   (d) None of these.

2. ——————— is the maximum length of a Python identifier.

   (a) 12.   (b) 38.

   (c) 44.   (d) No fixed length is identified.

3. Which of the following statements are used in Exception Handling in Python ?

   (a) Try.   (b) Except.

   (c) Finally.   (d) All of the above.

Turn over

4. Version of R released to the public in 2000 was ————————.

    (a) 1.0.0.   (b) 1.0.3.

    (c) 2.0.1.   (d) 1.1.0.

5. At higher level one "limitation" of R is that its functionality is based on :

    (a) Consumer demand.

    (b) User contributions.

    (c) User contributions and Consumer demand.

    (d) Lower-level contributions.

6. In R, a single element of a character vector is referred as ————————.

    (a) Character string.   (b) String.

    (c) Data strings.   (d) Raw data.

7. ———————— graph displays information as a series of data points connected by straight line segments.

    (a) Bar.   (b) Scatter.

    (c) Histogram.   (d) Line.

8. ———————— model is known as a gold standard for data analysis.

    (a) Inferential.   (b) Descriptive.

    (c) Causal.   (d) All of the above.

9. ———————— focuses on the discovery of unknown properties on the data.

    (a) Data mining.   (b) Big Data.

    (c) Data wrangling.   (d) Machine Learning.

10. In Big Data environments, Variety of data includes :

    (a) Includes multiple formats and types of data.

    (b) Includes structured data in the form of financial transactions.

    (c) Includes semi-structured data in the form of emails and unstructured data in the form of images.

    (d) All of the mentioned above.

11. Matrix A when multiplied with Matrix C gives the Identity matrix I, what is C ?

    (a) Identity matrix.   (b) Inverse of A.

    (c) Square of A.   (d) Transpose of A.

12. K-nearest neighbours algorithm is based on ———————— learning.

    (a) Supervised.   (b) Unsupervised.

    (c) Association.   (d) Correlation.

13. ———————— in Excel is an interactive way to quickly summarize large amounts of data.

    (a) Chart options.   (b) Mathematical function.

    (c) Pivot Table.   (d) Filter option.

14. ———————— is defined as the value that has a higher frequency in a given set of values.

    (a) Mode.   (b) Median.

    (c) Mean.   (d) Standard deviation.

15. ———————— is a process that reduces the volume of original data and represents it in a much smaller volume.

    (a) Data Reduction.   (b) Data transformation.

    (c) Data integration.   (d) Data Discretization.

(15 × 1/5 = 3 weightage)

Part B (Very Short Answer Questions)

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

16. Define big data.

17. What is standard deviation ?

18. What is use of Data sorting ?

19. Who is a data engineer ?

20. What is significance of EDA ?

21. What is purpose of Chi square test ?

Turn over

22. Define Triangular Matrix.

23. What does Multivariate non-graphical type of EDA denote ?

(5 × 1 = 5 weightage)

Part C (Short Answer Questions)

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

24. What is the significance of Data Warehouse ?

25. Describe the benefits of data visualization.

26. State the difference between Absolute Reference and Relative Reference in Excel.

27. What is the purpose of data discretization ?

28. State the difference between prediction and causal models.

29. What is the significance of Relationship Matrix ?

30. Bring out the features of Supervised learning.

31. How can one perform filter command in Excel ?

32. What are magic commands in Python ?

33. Enumerate some of the statistical functions in Microsoft excel and its uses.

(7 × 2 = 14 weightage)

Part D (Essay Questions)

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

34. Describe the different analysis tools which help one to "approximately represent matrices by decomposition ?

35. Explain in detail the Steps in Data Science Process.

36. Explain in detail how to make a Histogram with Basic R.

37. Describe in detail the various aspects and features of R studio.

(2 × 4 = 8 weightage)

THIRD SEMESTER M.A. DEGREE (REGULAR) EXAMINATION NOVEMBER 2021

(CBCSS)

Econometrics

ECM 3C 11—STATISTICAL INFERENCE

(2020 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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Part A (Multiple Choice Questions)

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

1. The non-parametric counterpart to the dependent sample t test :

    a) Wilcoxon Signed Rank test.   b) Mann-Whitney U test.

    c) Kruskal Walli test.   d) None of these.

2. Type II error is made when we accept a null hypothesis which is :

    a) False.   b) True.

    c) Either (a) or (b).   d) None of these.

3. Suppose one sample has $n = 14$ with $S^2 = 14$ and another sample has an $n = 12$ with an S^2 of 8. If we want to find a t_{crit} Score , what degrees of freedom would we use ?

    a) 22.   b) 26.

    c) 9.   d) 20.

Turn over

4. An estimater is said to be ——————— If the expected value of sample statistic is same as that of the population parameter.

    a) Efficient.
        b) Sufficient.

    c) Unbiased.
        d) None of these.

5. In hypothesis testing, the distribution that we can use when the population standard deviation is known is ———————.

    a) Z.
        b) t.

    c) Chi-square.
        d) None of these.

6. In a contingency table, we test the null hypothesis that the two variables are ———————.

    a) Independent.
        b) Dependent.

    c) Mutually exclusive.
        d) Normally distributed.

7. The Kruskal-Wallis test follows a ——————— distribution.

    a) Z.
        b) t.

    c) F.
        d) Chi-square.

8. For Z test the degree of freedom is ———————.

    a) 1.
        b) n.

    c) $n - 1$
        d) Infinity.

9. A ——————— is a range of numbers believed to include an unknown population parameter.

    a) Confidence interval.
        b) Confidence level.

    c) Confidence co-efficient.
        d) None of these.

10. The area under a curve that has the values that lead to rejection of the null hypothesis ———————.

    a) Critical region.
        b) Critical values.

    c) Both (a) and (b).
        d) None of these.

11. Tests in which the hypothesis deals with population parameters are ———————.

    a) Parametric tests.
        b) Non-parametric tests.

    c) Either (a) or (b)
        d) Neither (a) or (b).

12. ———————————— is a statistical method for determining the existence of differences among several population means.

    a) ANOVA.
    b) t.

    c) Z.
    d) F.

13. Fit an equation of a line whose slope is – 2 and whose Y intercept is 8 :

    a) $y = 8 + 2x$.
    b) $y = 8 - 2x$.

    c) $- 2 + 8x$.
    d) None of these.

14. The ANOVA technique as developed by :

    a) Spearman.
    b) Gosset.

    c) R. A. Fisher.
    d) None of these.

15. Distribution free tests are basically ———————————.

    a) Parametric tests.
    b) Non-parametric tests.

    c) Either (a) or (b)
    d) Neither (a) or (b).

$(15 \times 1/5 = 3$ weightage)

Part B (Very Short Answer Questions)

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

16. What do you understand by statistical inference ?

17. Explain the term Estimation.

18. Define ANOVA.

19. A random sample having size 10 is drawn from a normal population having mean 12.1 and standard deviation 3.2. Can we assume that the population mean is 14.5 at 5 % level of significance (t 0.05 = 1.833) ?

20. A random sample of 27 pair of observations from a normal population gives a correlation co-efficient of 0.72. Is it likely that the variables in the population are uncorrelated ? (t 0.05 = 1.708 for df 25)

21. How is one Way ANOVA different from two way ANOVA ?

Turn over

22. The following are the rates of flow of a certain gas through two soil samples collected from two different samples is given below. Apply Wald-Wolfowitz test to test the hypothesis that the populations of soil types are the same with respect to the rates of flow through the soil at :

Sample X	23,	27,	19,	24,	22,	30		
Sample Y	21,	29,	34,	32,	26,	28,	36,	26

23. Write any *two* advantages of the non-parametric test.

(5 × 1 = 5 weightage)

Part C (Short Answer Questions)

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

24. Distinguish between Type I and Type II error.

25. Distinguish between Parameter and Statistic.

26. Explain any *two* features of sampling distribution.

27. What are the properties of a good estimator ?

28. Distinguish point estimate from interval estimate.

29. Discuss the method of Least Squares.

30. Two quality control departments (A and B) of a food processing factory independently collected sample of 100 items from different batches of production runs to check the quality of items produced. The number of defectives identified by these two departments are given as follows :

Department A   12,   6,   6,   4,   8,   5,   4

Department B   9,   3,   1,   0,   3,   7,   2,   11

Test the hypothesis that the two departments have drawn the samples from the same population using the Mann Whitney U test.

31. Opinion about promotions, to be dependent on published work by persons interested in teaching or research was taken and displayed as below. Using Chi-square test the association between interest and promotion dependent on published work at 5 % level of significance (3.841) :

Interest	Promotion dependent on published work		Total
	Agres	Disagree	
Teaching	90	10	100
Research	70	30	100
Total	160	40	200

32. Explain the difference between one tailed and two tailed test.

33. Distinguish between Null and Alternative hypothesis.

(7 × 2 = 14 weightage)

Part D (Essay Questions)

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

34. An agricultural scientist uses fertilizers supplied by three different manufacturers to study the yields. The yields (mt per acre per year) from different plots of similar characteristics are as follow : Using ANOVA test whether the yields differ significantly when fertilizers from different manufacturers are applied :

Observation	Fertilizer		
	I	II	III
1	55	73	70
2	75	87	72
3	73	84	75
4	77	57	80
5	78	65	83
6	85	60	–
7	92	–	–

Turn over

35. Briefly discuss the procedure of hypothesis testing.

36. (a) Under what circumstances do we use t distribution ? State the properties of t distribution.

   (b) Reon wishes to compare the two companies it uses to appraise the value of residential homes. He selected a sample of 10 residential properties and scheduled both firms for an appraisal. The results, reported in $000 are furnished below. At .05 significance level (2.262), can we conclude there is a difference in the mean appraised values of the homes ?

Home	1	2	3	4	5	6	7	8	9	10
Firm A	235	210	231	242	205	230	231	210	225	249
Firm B	228	205	219	240	198	223	227	215	222	245

37. Discuss the method of Maximum likelihood with its properties.

(2 × 4 = 8 weightage)

THIRD SEMESTER M.A. (CBCSS) DEGREE [REGULAR] EXAMINATION NOVEMBER 2021

Econometrics

ECM 3C 10—INTERNATIONAL FINANCE

(2020 Admission onwards)

Time : Three Hours　　　　　　　　　　　　　　　　　Maximum : 30 Weightage

General Instructions

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Part A (Multiple Choice Questions)

Answer **all** *questions.*
Each question carry 1/5 weightage.

1. Gains from devaluation of one nations currency accrue to her in form of :

    (a) Increase in exports.　　　　　(b) Increase in imports.

    (c) Increase in production.　　　　(d) Decrease in production.

2. Indirect Foreign Investment is also known as :

    (a) Portfolio Investment.　　　　(b) Grants.

    (c) Concessional aid.　　　　　(d) Investment by MNCs.

3. The earliest theory of foreign exchange rate :

    (a) Mint Parity theory.

    (b) Purchasing power parity theory.

    (c) The bop theory.

    (d) Monetary.

Turn over

4. J-cuve effect refers to :

    (a) Revaluation.   (b) Depreciation.

    (c) Appreciation.   (d) Devaluation.

5. Which of the following is incorrect with respect to options contract ?

    (a) A derivative instrument.

    (b) Can be used for hedging.

    (c) Can be used for speculation.

    (d) Buyer is obliged to transact.

6. Which is a suitable measure conveying currency value against a weighted basket of currencies ?

    (a) Nominal Exchange rate.   (b) Effective exchange rate.

    (c) Real exchange rate.   (d) Spot exchange rate.

7. Which economist is not related to the elasticity approach to BOP ?

    (a) Marshall.   (b) Lerner.

    (c) Robinson.   (d) Alexander.

8. Which theory views current account imbalance as the difference between output and spending ?

    (a) Elasticity.   (b) Absorption.

    (c) Keynesian.   (d) Monetary.

9. When did FEMA became operational ?

    (a) 1st January 1998,.   (b) 1st January 1999.

    (c) 1st January 2000.   (d) 1st June 2000.

10. Who determines exchange rate in India ?

    (a) Reserve Bank.   (b) Market Forces.

    (c) SEBI.   (d) IMF.

11. Which is the first MNC in India ?

    (a) East India Co.   (b) Tata.

    (c) Coca Cola.   (d) Pepsi Co.

12. Which country is a member of European Union ?

    (a) Iceland.   (b) Netherlands..

    (c) Norway.   (d) Switzerland.

13. The International institution which is responsible for reconstruction of economies.

    (a) IMF.   (b) IBRD.

    (c) IDA.   (d) IFC.

14. What is the accounting unit of IMF ?

    (a) Pound.   (b) Reserve Currency.

    (c) Yuan.   (d) SDR.

15. When did Bretton Woods System collapse ?

    (a) 1947.   (b) 1951.

    (c) 1961.   (d) 1971.

<div align="right">(15 × 1/5 = 3 weightage)</div>

Part B (Very Short Questions)

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

16. Define accommodating capital flows.

17. What is Marshall- Lerner condition ?

18. What is a derivative ?

19. What is below the line transactions ?

20. What is currency arbitrage ?

21. What is REER ?

22. What is the advantage of dollarization ?

23. What is FEMA ?

<div align="right">(5 × 1 = 5 weightage)</div>

Part C (Short Answer Questions)

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

24. Explain the purchasing power parity theory.

25. Discuss the significance of J-curve.

26. Who are the participants of foreign exchange market ?

<div align="right">**Turn over**</div>

27. What are the reasons for fluctuations in the value of the Rupee ?

28. What are the characteristics of a swap market ?

29. What role MNCs play in international capital flows ?

30. Explain the features of a currency Board.

31. What led to the creation of international monetary system ?

32. Distinguish between clean float and dirty float.

33. Explain briefly the European Monetary System.

(7 × 2 = 14 weightage)

Part D (Essay Questions)

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

34. Discuss the monetary approach to balance of payments.

35. What are the different methods of foreign exchange transactions ?

36. Explain the reasons for the collapse of Bretton wood system.

37. Explain the merits and demerits of fixed and flexible exchange rate.

(2 × 4 = 8 weightage)

THIRD SEMESTER M.A. DEGREE (REGULAR) EXAMINATION NOVEMBER 2021

(CBCSS)

Econometrics

ECM 3C 09—ECONOMETRIC THEORY—II

(2020 Admission onwards)

Time : Three Hours   Maximum : 30 Weightage

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Part A

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

1. Which of the following statements are true concerning a triangular or recursive system ?

   i) The parameters can be validly estimated using separate applications of OLS to each equation..

   ii) The independent variables may be correlated with the error terms in other equations.

   iii) An application of 2SLS would lead to unbiased but inefficient parameter estimates.

   iv) The independent variables may be correlated with the error terms in the equations in which they appear as independent variables :

   (a) (ii) and (iv) only.   (b) (i) and (iii) only.

   (c) (i), (ii) and (iii) only.   (d) (i), (ii), (iii) and (iv).

Turn over

2. The LIML method results in consistent estimates that are exactly equal to —————— estimates when an equation is exactly identified.

    (a) OLS.
          (b) ILS.

    (c) 2SLS.
          (d) IV.

3. Which of the following statements is false concerning the linear probability model ?

    (a) There is nothing in the model to ensure that the estimated probabilities lie between zero and one.

    (b) Even if the probabilities are truncated at zero and one, there will probably be many observations for which the probability is either exactly zero or exactly one.

    (c) The error terms will be heteroscedastic and not normally distributed.

    (d) The model is much harder to estimate than a standard regression model with a continuous dependent variable.

4. Which of the following is a disadvantage of the random effects approach to estimating a panel model ?

    (a) The approach may not be valid if the composite error term is correlated with one or more of the explanatory variables.

    (b) The number of parameters to estimate may be large, resulting in a loss of degrees of freedom.

    (c) The random effects approach can only capture cross-sectional heterogeneity and not temporal variation in the dependent variable.

    (d) All of (a) to (c) are potential disadvantages of the random effects approach.

5. Suppose that we wished to evaluate the factors that affected the probability that an investor would choose an equity fund rather than a bond fund or a cash investment. Which class of model would be most appropriate ?

    (a) A logit model.
          (b) A multinomial logit.

    (c) A tobit model.
          (d) An ordered logit model.

6. —————— contains observations about different cross-sections across time.

    (a) Cross-sectional Data.
          (b) Time Series Data.

    (c) Longitudinal data.
          (d) None of the above.

7. ———————— is a set of relationships in which the effects flow in one direction only and there are no feedback loops such that effects are sometimes also causes.

   (a) Ordinary Least squares.   (b) Recursive model.

   (c) Simultaneous equation.   (d) Distributed lag models

8. ILS and 2SLS are which ———————— consider one equation at a time.

   (a) Limited Information methods.   (b) Full information methods.

   (c) Ordinary Least squares.   (d) None of the above.

9. Identify the type of model $Y_t = \alpha + \beta_0 Y_{t-1} + \beta_1 Y_{t-2} + ... + \beta_p Y_{t-p} + U_t$:

   (a) Autoregressive model.   (b) Distributed Lag Model.

   (c) Simultaneous Equation model.   (d) None of the above.

10. The odds ratio is :

   (a) The ratio of the probability of an event not happening to the probability of the event happening.

   (b) The probability of an event occurring.

   (c) The ratio of the odds after a unit change in the predictor to the original odds.

   (d) The ratio of the probability of an event happening to the probability of the event not happening.

11. Which of the following is a large-sample test of first-order serial correlation in autoregressive models ?

   (a) Granger Test.   (b) Instrument variable.

   (c) Durbin h statistic.   (d) None of the above.

12. ———————— occurs when an ordinary least squares regression is used to estimate an individual equation that is actually part of a simultaneous system of equations.

   (a) Recursive Model.   (b) Under identification.

   (c) Limited information method.   (d) Simultaneous equation bias.

13. When wages and education jointly depend on ability which is not directly observable, but we can use available test scores to proxy for ability. This is an example of :

   (a) Indirect Least Squares.   (b) Full information Method.

   (c) Two Stage Least Square.   (d) Instrumental Variable.   **Turn over**

14. ———————— occur when we have a "time series of cross-sections," but the observations in each cross-section do not necessarily refer to the same unit.

    (a) Pooled data.   (b) Cross-sectional data .

    (c) Ordinal data.   (d) Nominal data.

15. In binary logistic regression :

    (a) The dependent variable is continuous.

    (b) The dependent variable is divided into two equal subcategories.

    (c) The dependent variable consists of two categories.

    (d) There is no dependent variable.

$(15 \times 1/5 = 3 \text{ weightage})$

Part B (Very Short Answer Questions)

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

16. What is a Koyck lag ?

17. What is ILS ?

18. When do we use the partial adjustment model ?

19. What is the advantage of logit model ?

20. What is Multinomial Logistic Regression ?

21. What is meant by fixed effect model ?

22. Define the constant coefficients model.

23. What is an Autoregressive Lag model ?

$(5 \times 1 = 5 \text{ weightage})$

Part C (Short Answer Questions)

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

24. Write a short note on Simultaneous equation bias.

25. Bring out the salient features of the least squares dummy variable.

26. What is meant by Partial pooling ?

27. State the main reasons for including lags in an economic model.

28. What is the relevance of Instrumental variable estimation in regression analysis ?

29. Write a short note on Durbin h test.

30. Explain in detail the salient features of the Probit model.

31. Describe the Linear Probability Model.

32. How do you conceive a logit model ?

33. What is Simultaneity ? How does it occur ?

(7 × 2 = 14 weightage)

Part D (Essay Questions)

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

34. Explain in detail the steps involved in the 2SLS.

35. Describe the Almon approach to distributed lag model.

36. Identify the investment function using the rank condition :

Consumption function : $C_t = a_0 + a_1 Y_t - a_2 T_t + u$
Investment function : $I_t = b_0 + b_1 Y_{t-1} + v$
Taxation function : $T_t = c_0 + c_1 Y_t + w$
Definition : $Y_t = C_t + I_t + G_t.$

37. Explain in detail the salient features of Tobit model.

(2 × 4 = 8 weightage)