REV-01
MEC/01/05

2023/08

SET A

MA ECONOMICS
SECOND SEMESTER [SPECIAL REPEAT]
BASIC ECONOMETRICS
MEC – 204
[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. The first time difference of the series $Y_t=Y_{t-1}+U$ is
   a. Stationary b. Non stationary
   c. Unit root d. Deterministic

2. The necessary condition for the identification of the model is the
   a. Order condition b. Rank condition
   c. Both d. None

3. The lagged distribution models mostly suffer from the problem of
   a. Autocorrelation b. Heteroscedasticity
   c. Multicollinearity d. Simultaneity bias

4. In the model, $Y_t= a + bX_t + U_t$, U_t is the
   a. Estimation error b. Specification error
   c. Regression error d. None

5. The lagged values of the endogenous variables creates difficulty to test the presence of
   a. Spurious regression b. Autocorrelation
   c. Heteroscedasticity d. Multicollinearity

6. The sample variance estimate is included in which test?
   a. Test of fitness b. Z test
   c. t test d. Glejser test

7. The existence of relationship between the dependent variable and the independent variable is signified by
   a. $R^2=0$ b. $R^2=1$
   c. $R^2\leq1$ d. $R^2\geq1$

8. The proxy variable in the instrumental variable method is highly related to the
   a. Dependent variable b. Independent variable
   c. All the variables d. Error term

9. The degrees of freedom is not affected by the inclusion of more
   a. Parameters b. Dummy variables
   c. Explanatory variables d. Observations

10. The covariance between the dependent variable and the error term in case of the simultaneous equations is

a. 0 | b. 1
c. α | d. Indeterminate

11. What kind of a model is the Simple Linear Regression Model?

a. Univariate | b. Bi-variate
c. Multi-variate | d. None

12. Multicollinearity implies relationship among the

a. Regressors | b. Regressands
c. Disturbances | d. All

13. The demand equation $D = a - bP_1 + cP_2 + U$ is

a. Exactly identified | b. Over identified
c. Under identified | d. Cannot be determined

14. Generally, when the calculated value of a test statistic is greater than its tabular value, the null hypothesis is

a. Accepted | b. Rejected
c. Considered | d. Altered

15. Which property is not affected by the errors of measurement in the regressand?

a. Unbiasedness | b. Efficiency
c. Autocorrelation | d. Homoscedasticity

16. Which of the following cannot be a predetermined variable?

a. Exogenous | b. Endogenous
c. Lagged exogenous | d. Lagged endogenous

17. A random variable Y is denoted as Y(t) if it is

a. Continuous | b. Discrete
c. Grouped | d. All

18. The least square estimators are indeterminate when there is problem of

a. Autocorrelation | b. Multicollinearity
c. Heteroscedasticity | d. None

19. The trend of a time series is completely predictable if it is

a. Deterministic | b. Stochastic
c. Unit root | d. Stationary

20. Which equations should be identified for the identification of a model?

a. Structural | b. Reduced form
c. Both | d. None

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Descriptive

Time : 2 Hr. 30 Mins. Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. a) What is goodness of fit? Estimate the residual sum of squares for a two variable model. 2+5+3=10
   b) Explain the relationship between adjusted and unadjusted coefficient of determination.

2. a) Discuss the Goldfeld Quandt Test when the sample size n is 80. 5+5=10
   b) How can we remove autocorrelation when its value is not specified?

3. Consider the following demand and supply model for money: 4+6=10

$$M_d = a_1 + a_2Y_t + a_3R_t + a_4P_t + U_{1t}$$

$$M_S = b_1 + b_2Y_t + U_{2t}$$

   Where M = money, Y = income, R = interest rate, P = price
   a) Find the state of identification of the given model.
   b) Estimate the parameters of the identified equations by using a suitable method.

4. a) Discuss the situation of dummy variable trap and how it can be avoided. 3+7=10
   b) Distinguish between perfect and less than perfect Multicollinearity. How does multicollinearity lead to type 1 error?

5. Discuss whether the simple linear regression model satisfies the Gauss Markov Theorem. 10

6. a) Distinguish between autocorrelation and correlation. Represent the first order autoregressive scheme. 2+4+3=10
   b) Discuss the sources of heteroscedasticity.

7. a) Discuss the order condition for the identification of a model with a suitable example. 5+5=10
   b) State the advantages of the 2SLS over the ILS.

8. a) Discuss how the unit root process and random walk model are related. Are they stationary? 2+4+4=10
   b) How can the random walk models be converted into stationary models?

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