

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BA DEGREE EXAMINATION DECEMBER 2022

(Fifth Semester)

Branch – ECONOMICS

BASIC ECONOMETRICS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

1. Econometrics deals with
  - (i) Measurement of Economic Relations
  - (ii) A contribution of Economic Theory and Mathematical Economics
  - (iii) Enumeration and not prediction
  - (iv) Only specific components of Economic Relationships
2. Which is a branch of Econometrics?
  - (i) Theoretical Econometrics
  - (ii) Applied Econometrics
  - (iii) Both (i) and (ii)
  - (iv) None of the above
3. The main importance of Econometrics is
  - (i) Forecasting
  - (ii) Data Analysis
  - (iii) Data gathering
  - (iv) All the above
4. Coefficient of determination is defined as
  - (i)  $1-R^2$
  - (ii)  $1+R^2$
  - (iii)  $R^2$
  - (iv) None of the above
5. Dependent variable is also called as
  - (i) Regression
  - (ii) Explanatory Variable
  - (iii) Controlled Variable
  - (iv) Endogenous Variable
6. If  $Y_t = \alpha + \beta X_t + \gamma Y_{t-1} + W_t$ , it is called
  - (i) Double Log Model
  - (ii) Auto Regressive Model
  - (iii) Semi – Log Model
  - (iv) Distributed Lag Model
7. Auto correlation is generally occurred in
  - (i) Cross – section data
  - (ii) Time Series data
  - (iii) Pooled data
  - (iv) None of the above
8. Durbin Watson test is associated with
  - (i) Heteroscedasticity
  - (ii) Multicollinearity
  - (iii) Autocorrelation
  - (iv) Both (a) and (c)
9. The rank condition is
  - (i) A necessary condition for identification
  - (ii) A sufficient condition for identification
  - (iii) Both a necessary and sufficient conditions for identification
  - (iv) None of the above
10. In a simultaneous equation if  $k > g - 1$ , where  $k$  = total number of variables,  $g$  = number of endogenous variable then the equation is
  - (i) Over identified
  - (ii) Under identified
  - (iii) Exactly identified
  - (iv) Not identifiable

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

11. a. State the Econometric Research.  
OR  
b. Compare the 'Econometrics' and 'Mathematical Economics'.

Cont...

- 12 a Explain the testing of hypothesis.  
OR  
b Develop the concept of coefficient of Determination ( $R^2$ ).
- 13 a Describe the effect of autocorrelation.  
OR  
b) State the Multicollinearity.
- 14 a Explain the uses of dummy variables.  
OR  
b Narrate any two examples of lagged variable from Economics.
- 15 a Summaries the rules for identifications of an equations.  
OR  
b Bring out the essential character of the problem of identification.

**SECTION -C (40 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

- 16 a Discuss the various steps involved in Econometric Research.  
OR  
b Examine the properties of the Ordinary Least Squares estimators.
- 17 a Enumerate the underlying idea in the technique of Analysis of Variance.  
OR  
b From the following table calculate the F – ratio and discuss whether the regression is significant.

Sources of Variation	Sum of Squares	Degrees of freedom	Mean Square error	F*
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$$X \quad \sum \hat{y}^2 = 845 \quad k-1=1$$

$$\text{Residual} \quad \sum e^2 = 133 \quad N-k=28$$

$$F_{0.05} = 4.20, \text{ with } V_1 = 1, v_2 = 28.$$

- 18 a Following table gives ages in year of 10 husbands and their wives.

Age of husband (X)	18	19	20	21	22	23	24	25	26	27
Age of wife (Y)	17	17	18	18	18	19	19	20	21	22

- (a) Estimate the linear regression of the ages of wives (Y) on the ages of husbands (X).  
(b) Are the age of wives dependent on the ages of their husbands? Use 5% level of significance.  
(c) Estimate the age of the wife whose husband is 28 years.  
OR
- b Examine the effects of Multicollinearity in a data. How will you detect and rectify the problem.
- 19 a Discuss the term 'Dummy Variable'.  
OR  
b Analyse the Auto Regressive Model.
- 20 a Examine the method of Simultaneous Equation.  
OR  
b Analyse the Structural Model.