

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BA DEGREE EXAMINATION MAY 2024
(Fifth Semester)

Branch – ECONOMICS

BASIC ECONOMETRICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Econometrics is...?
(i) Statistical analysis of economic relationship.
(ii) Mathematical analysis of economic relationship.
(iii) Both i and ii
(iv) ii only correct
- 2 The most used method for estimation in econometrics is...?
(i) OLS (ii) GLS
(iii) MLE (iv) GMM
- 3 The slope of the regression line of Y on X is also referred to as the:
(i) Regression coefficient of X on Y
(ii) The correlation coefficient of X on Y
(iii) Regression coefficient of Y on X
(iv) Correlation coefficient of Y on X
- 4 A _____ variable is used to incorporate qualitative information in a regression model.
(i) dependent (ii) continues
(iii) binominal (iv) dummy
- 5 Solve the simultaneous equations $13X - 6y = 20$, $7x + 4y = 18$
(i) $x = 2, y = 1$ (ii) $x = 4, y = 8$
(iii) $x = 6, y = 1$ (iv) $x = 2, y = 4$

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a) Explain the scope of econometrics.
OR
b) State the concept of the population regression function.
- 7 a) Conduct an F-Test on the following samples:
Sample-1 having variance = 109.63, sample size = 41.
Sample-2 having Variance = 65.99, sample size = 21.
OR
b) Calculate the ANOVA coefficient for the following data:

Plant	Number	Average span	s
Hibiscus	5	12	2
Marigold	5	16	1
Rose	5	20	4

Cont...

- 8 a) The regression equation for variables x and y are:
 $7x - 3y - 18 = 0$ and $4x - y - 11 = 0$.
- What is the AM for x and y?
 - Find the correlation coefficient between x and y.

OR

- b) Outline the limitations of the Durbin-Watson test.

- 9 a) Summarize the reasons for lags in a model.

OR

- b) Bring out the uses of dummy variables.

- 10 a) Solve the following simultaneous equations:

$$2x + 3y = -2$$

$$5x + 4y + 2 = 0$$

OR

- b) Explain the identification of rank order conditions.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a) Classify the various divisions of econometrics.

OR

- b) Discuss the methodology of econometrics.

- 12 a) Trace the t-test value for the following given two sets of values:

7, 2, 9, 8 and 1, 2, 3, 4?

OR

- b) The Least Squares Model for a set of data $(x_1, y_1), (x_2, y_2), (x_3, y_3), \dots, (x_n, y_n)$ passes through the point (x_a, y_a) where x_a is the average of the x_i 's and y_a is the average of the y_i 's. To find the equation of a straight line or a least square line using the least square method. Consider the time series data given below:

x_i	8	3	2	10	11	3	6	5	6	8
y_i	4	12	1	12	9	4	9	6	1	14

Use the least square method to determine the equation of a line of best fit for the data.

- 13 a) Trace $\log(75/16) - 2\log(5/9) + \log(32/243)$ in terms of $\log 2$ and $\log 3$.

OR

- b) Enumerate the causes and consequences of multicollinearity.

- 14 a) Discuss the ad hoc estimation of the distributed lag model and its drawbacks.

OR

- b) Suppose that we want to analyze how personal income is affected by:

- years of work experience;
- postgraduate education.

To do so, we can specify a linear regression model as follows:

$$y_i = \beta_0 + x_i\beta_1 + d_i\beta_2 + \varepsilon_i$$

- 15 a) Solve the following simultaneous equations using the substitution method.

$$b = a + 2$$

$$a + b = 4.$$

OR

- b) Find the line of best fit for the following data points using the least squares method:
 $(x, y) = (1, 3), (2, 4), (4, 8), (6, 10), (8, 15)$.

Z-Z-Z

END