

2022

ECONOMICS

[Honours]

(B.Sc. Fourth Semester End Examination-2022)

PAPER-C10T

Full Marks: 60

Time: 03 Hrs

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Group-A

- 1) Answer any ten questions from the following: 10x2= 20**
- a. What is meant by term “non-stochastic”?
 - b. Distinguish between pooled data and panel data.
 - c. What is meant by level of significance?
 - d. What is adjusted R^2 (or \bar{R}^2)
 - e. What is interval estimation?
 - f. Define goodness of fit.
 - g. How can you detect heteroskedasticity problem?
 - h. What do you mean by specification bias?
 - i. Distinguish between ‘regression’ and ‘correlation’.
 - j. Are the following models linear regression model? Why or Why not?

(2)

i) $y_i = \beta_1 + \beta_2 x_i + u_i$

ii) $y_i = e^{\beta_1 + \beta_2 x_i^2} + u_i$

- k. Distinguish between 'parameter' and 'statistics'.
- l. Why is an error term included in an econometric model?
- m. Define Type-II error. How is it related with power of the test?
- n. Compute $\hat{\beta}$ as the estimated value of β in the regression model $y_i = \alpha + \beta x_i + u_i$ when $\sum X_i = 156, \sum Y_i = 112.7712, \sum x_i = 182,$ and $\sum y_i x_i = 131.7856, (x_i = X_i - \bar{X} \text{ and } y_i = Y_i - \bar{Y})$
- o. What is dummy variable trap?

Group-B

Answer any four questions from the following: 4x5 = 20

- 2) Make a comparison between t-test and z-test. 5
- 3) Show that total sum of square is equal to explained sum of squares and residual sum of squares. 5
- 4) Estimate α and β with the help of ordinary least square method for the equation $Y_i = \alpha + \beta x_i + u_i$ 5
- 5) Explain the consequence of perfect multicollinearity. 5
- 6) What are the consequences of inclusion of an irrelevant variable? 5
- 7) Consider the following linear regression equation:

(3)

$Y_i = 0.00681 + 0.75815 X_i$

$se = (0.02596) \text{ (....?....)}$

$t = (\text{.....?....}) \text{ (2.80700)}$

$r^2 = 0.4406$

- i) Find the missing numbers within the parenthesis.
- ii) Obtain the sample size
- 8) Nine patients to whom a certain drug was administered, registered the following rise in blood pressure: 3,7,4,-1,-1,6,-4,1,5. Test the hypothesis that the drug does not raise blood pressure at 5% level of significance. Assume that the sample is from a normal population. Given $p(t > 1.86) = 0.05$ for 8 degrees of freedom. 5
- 9) How is the problem of Heteroskedasticity solved? 10

Group -C

Answer any two questions of the following: 10x2 = 20

- 10) How is specification error detected using Lagrange Multiplier (LM) test? 10
- 11) Show that in two variable linear regression model $Y = \alpha + \beta x + u$ the OLS estimator of β is BLUE. 10
- 12) How would you use Durbin-watson d-statistics to test for serial correlation? What are the limitations of Durbin Watson test?

7+3
