U.G. 4th Semester Examination - 2022

ECONOMICS

[HONOURS]

Course Code: BECOCCHT 403

Course Title: Introductory Econometrics

Full Marks : 40 Time : 2 Hours

The figures in the right-hand margin indicate marks.

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

1. Answer any **ten** questions from the following: 1×10=10

a) What is the literal meaning of econometrics?

b) What is model specification in econometrics?

c) What is a deterministic relationship between two variables?

d) Name two popular estimation techniques used in econometrics.

e) Violation of which assumption in SLRM leads to the biased intercept problem?

f) If assumption of serial independence gets violated then what type of problem will creep in SLRM?

g) What is the probability distribution of the dependent variable in the CLRM?

$Y_i = \alpha + \beta X_i + u_i$ with usual assumptions and notations.

h) Write down the relation between regression slope and correlation coefficient.

i) What is the formula for the confidence Interval for β in CLRM with $\lambda/2$ level of significance?

j) If $w_i = \frac{x_i}{\Sigma x_i^2}$, Find Σw_i^2.

k) The overall significance of an estimated multiple regression model is tested by which test?

l) In presence of autocorrelation standard errors of OLS estimators become _____.

m) Write down two causes of heteroskedasticity.

n) What kind of dummy variable is used to access the change in slope of the model?

o) Which test can identify multicollinear variables in the multiple regression model?

2. Answer any **five** questions: 2×5=10

a) Write two limitations of Goldfeld-Quandt test.

b) What is the impact of additional increase in explanatory variable on TSS, ESS and RSS?

c) If R^2=0.8, number of regressions are 2 and sample size is 10, what will be the value of $\bar{R}^2$?

d) What is the difference between R^2 and adjusted R^2?

e) If $F = \frac{ESS/K}{RSS/(n-k-1)}$, find the relation between R^2 and F statistic.

f) In the estimated regression equation $y = -50 + 0.8x$ what is the value of the residual at point x=10, y=10.

g) $\hat{\beta}_{xy} = -1.8$ and $\hat{\beta}_{yx} = -0.2$, then find out value of r_{xy}.

h) What is 2t thumb rule?

3. Answer any **two** questions: 5×2=10

a) i) Find out the relation between f statistic and r^2 in SLRM.

ii) Write down the relation between r^2 and t statistic. 4+1

b) Prove the bestness property of an OLS estimator in SLRM.

c) Write a short note on Goldfeld-Quandt Test.

4. Answer any **one** question : 10×1=10

a) i) Determine the OLS estimators in an SLRM.

ii) Prove that OLS estimators are linear and unbiased.

iii) Prove that TSS=ESS+RSS. 5+3+2

b) i) Define overall significance of estimated multiple regression.

ii) Define goodness of fit of multiple regression .

iii) Compute the value of $\bar{R}^2$ in terms of R^2. 3+3+4

c) i) Describe how one may understand graphically the presence of heteroskedasticity in data.

ii) Prove that OLS estimators are inefficient but consistent under heteroskedasticity. 4+6

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