2016

M.A/M.Sc.

3rd Semester Examination

ECONOMICS

PAPER—ECO-301E

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

Special Paper : Econometrics I

Group—A

1. Answer any *two* of questions : 2×2

(a) What do you mean by exact multicollineanity ?
What are it consequences ? 1+1

(b) What is enhancement synergism ? How is it detected ? 1+1

(c) When do we say that the regression coefficient of regressor is giving a wrong sign ? 2

(d) Why does heteroscedasticity occur ? 2

2. Answer any *one* question : 1×6

(a) What is Theil's adjusted R^2 ? What adjustment does it actually make ? 2+4

(b) For what purpose do we assume that the disturbance terms in the regression model are unbiased ? To what extent is the assumption realistic ? 3+3

3. Answer any *one* question : 1×10

(a) Show that that estimated regression coefficient of X_1 in the regression of Y an X_1 and X_2 is same as the estimated regression coefficient of $e_{1\cdot2}$ in the regression of Y on $e_{1\cdot2}$ and also same as that of $e_{1\cdot2}$ in the regression of $e_{4\cdot2}$ and $e_{1\cdot2}$. What do the equalities imply ?

(b) Regression of U.S. investment (Y) on sales (X_1) and interest rate (X_2) for annual data in the period 1960 to 1999 gives the following result [Y and X_1 measured in billion dollars] :

$Y = 6{\cdot}27 + 0{\cdot}0005\,X_1 - 7{\cdot}84\,X_2$

t – values : [0·62] [35·76] [– 6·18]

p – values : [0·54] [2·7E–30] [3·6E – 07]

$R^2 = 0{\cdot}9727$, $F = 658{\cdot}15$, Sinificance F = 1·2E–29.

Regression of Y an X_1 only gives.

$Y = -47{\cdot}56 + 0{\cdot}0005\,X_1$

t – values : [– 6·42] [25·41]

p – values : [0·54E–07] [1·87E–25]

$R^2 = 0{\cdot}9444$, $F = 645{\cdot}91$ Singifican F = 1·87E – 25

Regression of Y on X_2 only gives

$Y = 47{\cdot}52 + 7{\cdot}36\,X_2$

t – values [0·80] [1·05]

p – values [0·43] [0·30]

$R^2 = 0{\cdot}0280$, $F = 1{\cdot}09$ Significance F = 0·30

Interpret the results.

Group—B

4. Answer any *two* questions : 2×2

(a) Show that the maximum likelihood estimator of β is en unbiased estimator of β.

(b) What do you mean by structural change ?

(c) What are dummy Variables ?

(d) What are coveriates or control variables ?

5. Answer any *one* question : 1×6

(a) Discuss ANOVA and ANCOVA models with an example.

(b) Derive the unrestricted maximum likelihood estimator, $\tilde{\beta}$ for a k-variable CLRM. 3+3

6. Answer any *one* question : 1×10

(a) Discuss the different uses of dummy variable. What is dummy variable trap ?

(b) Derive the maximum likelihood estimator of α, β and σ^2 incase of a two variable model,

$y_i = \alpha + \beta \times i + v_i$ where $v(v_i) = \sigma^2$. 7+3

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