UNIVERSITY OF THE PUNJAB

Seventh Semester – 2019

Examination: B.S. 4 Years Program

Roll No. in Fig. .....

Roll No. in Words. .....

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Signature of Supdt.:

PAPER: Basic Econometrics (Theory) **MAX. TIME: 15 Min.**

Course Code: STAT-403 Part–I (Compulsory) **MAX. MARKS: 10**

Attempt this Paper on this Question Sheet only.

Please encircle the correct option. Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer, cutting and overwriting is not allowed. (1x10=10)

(i) Least squares estimation require normality assumption of error term.

(ii) Econometrics is combination of Economic theory and Mathematics only.

(iii) In linear regression models, the variance of regressand and error terms are same.

(iv) In G.L. Regression model, regressors are random variables.

(v) In regression analysis, error sum of squares follows F-distribution.

(vi) Restricted L.S. estimators are more precise.

(vii) Ridge regression estimators are BLUE.

(viii) CHOW test is applied to compare two simple linear regressions.

(ix) Econometric models are inexact.

(x) In S.L. Regression $Y = \alpha + \beta X + \in$, covariance between the estimators of α and β is negative.

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Seventh Semester – 2019

Examination: B.S. 4 Years Program

Roll No. .....

PAPER: Basic Econometrics (Theory)

Course Code: STAT-403 Part – II

MAX. TIME: 2 Hrs. 45 Min.

MAX. MARKS: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Answer to the following short questions. **(4x5=20)**

(i) Methodology of Econometric research.

(ii) Assumptions of M.L. estimation for GL regression

(iii) Ridge Regression

(iv) Test-statistic to test some regression co-efficients in GL regression

(v) Sampling distribution of regression sum of squares..

Long questions

Q.3. For S.L. Regression $Y = \alpha + \beta X + \in$, show that ML estimate of α is BLUE. **(07)**

Q.4. Consider the partitioned G.L. regression $\underline{Y} = X_1\underline{\beta}_1 + X_2\underline{\beta}_2 + \underline{\in}$ Show that lower right-hand block in $(X'\ X)^{-1}$ may be expressed as $(X_2'\ M_1X_2)^{-1}$, where $M_1 = I - X_1\left(X_1'\ X_1\right)^{-1}X_1'$ Give a least squares interpretation of M_1X_2 *and* $X_2'\ M_1X_2$ **(07)**

Q.5. A production function model is specified as $Y = \beta_1 + \beta_2X_2 + \beta_3X_3 + u$ **(09)**

The data refer to a sample of 23 firms and following calculations are made as deviations from the sample means.

$\sum x_2^2 = 12, \quad \sum x_3^2 = 12, \quad \sum y^2 = 10, \quad \sum x_2x_3 = 8, \quad \sum x_2y = 10, \quad \sum x_3y = 8$

What is the L.S. estimate of β_3 and its standard error, when $\beta_2 + \beta_3 = 1$

Q.6. Consider the partitioned G.L. regression $\underline{Y} = X_1\underline{\beta}_1 + X_2\underline{\beta}_2 + \underline{\in}$. Obtain stepwise regression estimates of $\underline{\beta}_1$ *and* $\underline{\beta}_2$. Compare these estimates with full regression estimates. **(07)**