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PG/IIS/ECO-204/15

M.A./M.Sc. 2nd Semester Examination, 2015

ECONOMICS

PAPER — ECO-204

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*

Illustrate the answers wherever necessary

GROUP — A

1. Answer any two questions : 2 × 2

(a) Under what circumstances, is regression of an independent variable on a dependent variable preferable to the reverse ?

(b) What are Type I & Type II error ?

(Turn Over)

(2)

(c) How much confidence can we attach to a point estimator? Explain.

(d) If the population variance is not given, which test is used for testing population mean irrespective of the sample size.

2. Answer any *one* question : 6 × 1

(a) What is simple random sampling? Show that the random variables x_i and x_j are not independent in simple random sample with replacement. 2 + 4

(b) Define frequency χ^2 . Explain its several uses. 3 + 3

3. Answer any *one* question : 10 × 1

(a) Derive the maximum likelihood estimators of α , β , and σ_4^2 in the standard linear simple regression model. Why are these estimators of α and β identical to the least square estimators?

- (b) Show that \bar{x} is the minimum variance unbiased estimator of μ for both SRSWR and SRSWOR.

GROUP – B

4. Answer any *two* questions : 2 × 2

(a) What are the basic reasons behind the inclusion of an 'error term' in an econometric model ?

(b) Explain the concept of multicollinearity by presenting a real life example.

(c) For the general linear model, the OLS estimators are computed as

$$\hat{\beta} = (X'X)^{-1} X'Y$$

what happens to $\hat{\beta}$ when there is perfect multicollinearity ?

(d) Explain the concept of dummy variable trap.

5. Answer any *one* of the following : 6×1

(a) Derive the formula for D-W statistic. What are the limitation of D-W test ? Is this test applicable to small samples ? If not, what correction would you suggest to make it suitable for small samples ?

(b) What are dummy variables ? What are its basic uses ?

6. Answer any *one* of the following : 10×1

(a) What do you mean by Simultaneity bias or LS bias ? Explain the problem of identification, both intuitively and econometrically. How can it be solved ? Explain graphically. $2 + 5 + 3$

(b) What are the best properties of an estimator in a multiple regression model ? Prove that the OLS estimators have these properties. State the conditions which must be satisfied by the OLS estimators to have these properties. 10