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 : \[2 \times 2\]

(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)
(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:  

   (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 $\chi^2$. Explain its several uses. 

      $3 + 3$

3. Answer any one question:  

   (a) Derive the maximum likelihood estimators of $\alpha$, $\beta$, and $\sigma^2$ in the standard linear simple regression model. Why are these estimators of $\alpha$ and $\beta$ identical to the least square estimators?
(b) Show that $\bar{x}$ is the minimum variance unbeased estimator of $\mu$ for both SRSWR and SRSWOR.

GROUP - B

4. Answer any two questions : $2 \times 2$

(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 x 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 x 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