2013

M.A./M.Sc.

2nd Semester Examination

ECONOMICS

PAPER—VIII (ECO-204)

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.

Group—A

1. Answer any *five* questions : 2×5

(a) State the assumptions about the distribution of the disturbance term in a regression model.

(b) What problems would you encounter if OLS method is used to estimate parameters of a regression equation with an auto-correlated disturbance term ?

(c) What do you mean by 'goodness of fit' for a regression equation ?

(d) Distinguish between Type I error and Type II error.

(e) When is the estimate of a population parameter said to be 'asymptotically efficient' ?

(Turn Over)

(f) What do you mean by sampling distribution of a statistic ?

(g) What do you mean by a sufficient estimator ?

(h) State and briefly explain the consequences of Autocorrelation.

(i) Present a real-life example of heteroscedasticity problem in econometrics.

(j) Distinguish between exogamous variables and pre-determined variables.

Group—B

Answer any *two* questions : 5×2

2. Distinguish between point estimation and interval estimation. Mention the advantages of interval estimation over point estimation. 3+2

3. Consider the following Keynesian model of income determination :

$$C_t = \alpha + \beta Y_t + u_t$$
$$Y_t = C_t + I_t$$

where C = consumption expenditure, y = income, I = Investment, α and β = parameters, u_t = error term.

In this model endogenous variables are C and Y and pre-determined variable is I. By applying order condition, check the identifiability of each of the equation in the system and the system as a whole. Also check the rank condition of identification for the first equation.

$2\frac{1}{2}+2\frac{1}{2}$

4. Consider the following data set :

Y	X_2	X_3
1	1	2
3	2	1
8	3	- 3

Estimate the following regression :

$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + u_i$

Also interpret your results. 5

5. Consider the following equations :

$q = q_1 + b_1 p + c_1 y + d_1 R + u_1$: demand function

$q = a_2 + b_2 p + u_2$: supply function

where, p = price, y = income and R = rainfall,
u_1 & u_2 = error terms.

Can you identify these equations ?

Group—C

Answer any *two* questions : 10×2

6. Define the likelihood function of μ and σ^2 on the basis of a simple random sample with replacement drawn from a normal population $X \sim W(\mu, \sigma^2)$ and derive the maximum likelihood estimates of them. 10

7. Show that the OLS estimators of the parameters of a standard linear regression model involving 'k' regressors are BLUEs. 10

8. Explain the statement that the basic problem of multicollinearity lies in its degree. Presenting an example, explain why multicollinearity arises in an econometric model. State and prove the consequences of multicollinearity problem. State the basic remedial measures to solve the problem of multicollinearity in an econometric model. 2+2+5+1

9. (i) State the Central Limit Theorem and discuss its importance.

   (ii) A psychologist claims that the mean age at which children start walking is 12.5 months. Carol wanted to check if this claim is true. She took a random sample of 18 children and found that the mean age at which these children started walking was 12.9 months with a standard deviation of 0.80 month. Using the 1% significance level, can you conclude that the mean age at which all children start walking is different from 12.5 months? Assume that the ages at which all children start walking have an approximately normal distribution.

Use the information given below

Area in the right tail under t distribution curve

d_f	.01	.005	.001
16	2.583	2.921	3.686
17	2.567	2.898	3.646
18	2.552	2.878	3.610

3+7