Exam. Code : 103206

Subject Code : 1232

B.A./B.Sc. Semester—VI

QUANTITATIVE TECHNIQUES

Paper—VI

Time Allowed—3 Hours]   [Maximum Marks—100

INSTRUCTIONS TO CANDIDATES

(1) **First** question consisting of **10** short answer type questions (each carrying **2** marks) is compulsory.

(2) Student will attempt **1** out of **2** questions from each of **four** units (20 marks each).

(3) Non-scientific and Non-programmable simple calculator is allowed.

1. Attempt **all** of the following :

(a) Define method of OLS.

(b) What is the difference between OLS and Maximum Likelihood method ?

(c) How GLM is different from classical linear regression model ?

(d) How R^2 is different from $\overline{R^2}$?

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(e) Define confidence interval.

(f) Define the nature of problem faced if error term is significantly correlated with one of the independent variable of multiple regression model.

(g) Explain specification error.

(h) How autocorrelation can be detected if the model consist of a lagged item as independent variable ?

(i) Define distributed lag model.

(j) Explain one use of dummy variables.

$2 \times 10 = 20$

UNIT– I

2. Show that in case of classical linear regression model OLS estimates are equal to ML estimates. 20

3. Derive formula of coefficient of correlation between intercept and slope parameters of regression model $Y_i = a + bX_i + U_i$. 20

UNIT—II

4. Find out Var-cov matrix for the following GLM :

$$Y = X\beta + U.$$ 20

5. Explain and derive the formula of R^2. Show the relationship between R^2 and $\overline{R^2}$. 15+5

UNIT—III

6. Discuss the consequences and methods to detect problem of Multicollinearity. 10+10

7. Discuss the nature of specification biases in detail. Also derive the specification bias if an important variable is removed from the model. 8+12

UNIT—IV

8. Show that OLS estimates though remain unbiased but becomes inefficient if error term is serially correlated. Also prove that the presence of autocorrelation inflates R^2. 10+10

9. Discuss different types of dummy variables. How dummy variables address the issue of regression stability ? 10+10