Seat No. : _____

AC-123

April-2016

M.Sc., Sem.-IV

508 : Statistics

Time : 3 Hours] **[Max. Marks : 70**

Instruction : All questions carry equal marks.

1. (a) State GLM with necessary assumptions. Discuss the effect of violation of the assumptions.

OR

Discuss estimation associated with GLM.

(b) Describe generalized least squares model. Discuss Aitken's approach.

OR

Write note on heteroscedasticity.

2. (a) Discuss the situations that give rise to hetroscadasticity.

OR

Discuss any one test for detecting heteroscedasticity.

(b) What is Multicollinearity ? Discuss different types of multicollinearity and their effect in estimation in linear regression model.

OR

How do you tackle the problem of multicollinearity.

3. (a) What is autocorrelation ? How do you tackle the problem of autocorrelation ?

OR

Discuss important test for auto-correlation.

(b) Discuss the situation which give rise to auto-correlation.

OR

Discuss some salient features of dummy variable(s) method.

4. (a) Discuss the use of dummy variables in industry.

OR

Discuss how dummy variable technique is useful in deseasonalization of time series data.

(b) What is the system of simultaneous equations ? Discuss the method of estimation of the parameters under the system of simultaneous equations .

OR

Write note on 2-SLS method for a system of simultaneous equations.

5. Answer the following :

1. State unbiased estimate of $\underline{\beta}$ in GLM.

2. State variance of $\underline{\beta}$ in GLM.

3. Define multicollinearity.

4. State T/F.

   We can suspect the presence of multicollinearity in GLM when error terms are correlated.

5. State use of p-value.

6. State the use of VIF.

7. How do you test heteroscedasticitv using graph ?

8. What is use of rank correlation test ?

9. Define Dummy variable.

10. State the distribution of y in GLM when disturbance terms follows normal distribution with necessary assumptions..

11. State rank condition for identification of an equation in a system of simultaneous equations.

12. State order condition for identification of an equation in a system of simultaneous equations.

13. Define exogenous variable.

14. Give an example of GLM.