Q.1.   Answer the following short questions: (6x5=30)

a)   Explain the use of extraneous information in linear regression.
b)   Discuss the methodology of Econometric research.
c)   Under what reasons an error term is introduced in Econometric model?
d)   Discuss Restricted Least Squares method.
e)   Write short note on Stepwise regression.
f)   Discuss the assumptions of MLE method for GLR model.

Answer the following questions.   (3x10=30)

Q.2.   Show that least squares unbiased estimate of variance of disturbance term is given by

$$\widehat{\sigma_u}^2 = \frac{\sum e_i^2}{n - k - 1}$$

Where e_i the ith residual, k is the number of explanatory variables of the GLR model

Q.3.   Consider the General linear regression model $\underline{Y} = X\underline{\beta} + \underline{\varepsilon}$ which fulfills the OLS assumptions. Develop the testing procedure for $H_0: \underline{\beta} = \underline{\beta}_0$.

Q.4.   For the Simple linear regression model, show that the maximum likelihood and OLS estimators of β are equal.