

St. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
MID-SEMESTER TEST – AUGUST 2016
M.A ECONOMICS – III SEMESTER
EC 9416– BASIC ECONOMETRICS

Time: 1 hr 30 min

Maximum marks: 35

This question paper has 1 printed page and 3 parts

Part A. Answer any FIVE of the following:

2x5=10

1. State the assumptions of classical linear regression model.
2. Suppose a researcher run a regression to estimate the relation between consumption and income for 100 households and obtained R^2 value which is 0.6. Derive the adjusted R^2 value.
3. Suppose the adjusted R^2 is 0.8 for a sample size of 150 firms. A researcher tries to estimate production function considering two factors of production using Cobb-Douglas production functional form. What is the value of F-statistic?
4. Define multiple correlation coefficient.
5. A researcher finds that correlation coefficient between consumption and income is 0.8. If she runs a regression what proportion could be explained by income? Give your explanation.
6. Show that the mean value of the residual is zero in two-variable regression model.

Part B: Answer any ONE of the following:

10x1=10

7. Derive the estimates of regression coefficients using OLS principle.
8. Show that b_{kX1} is BLUE of β_{kX1} for k-variable regression model.

Part C: Answer any ONE of the following:

15X1=15

9. For a sample of 209 firms, Wooldridge obtained the following results:

$$\log(\widehat{\text{salary}}) = 4.32 + 0.28 \log(\text{sales}) + 0.0174 \log(\text{roe}) + 0.00024 \log(\text{ros}), \quad R^2 = 0.283$$

$$\begin{array}{cccc} (0.32) & (0.035) & (0.0041) & (0.00054) \end{array}$$

Where, salary = salary of CEO, sales = annual firm sales, roe = return on equity in percent, ros = return on firm's stock, and figure in the parentheses are the estimated standard errors.

- (a) Which of the following coefficients are individually statistically significant at 5 %?
 - (b) interpret the coefficients of roe and ros.
 - (c) Find out the adjusted R^2 .
10. Consider the k-variable regression model. Find the expression of variance-covariance matrix of OLS estimator. Also estimate the variance of the disturbance term.