**Introductory Econometrics ( Section 2)**

Time: 1 Hour Max Marks-15

1. Consider the simple linear regression model

$$Y\_{i}=B\_{0}+B\_{1}X\_{i}+u\_{i}$$

(a). State the assumptions of the Classical Linear regression model. Are these assumptions necessary to obtain the OLS estimates? If not, what is the significance of making these assumptions.

(b). Suppose that E(u)≠ 0. Letting $α\_{0}=E\left(u\right)$, show that the model can always be re-written as one with the same slope, but a new intercept and error term where the new error term has a zero expected value.

 (2.5, 2.5)

1. The relationship between sales and profits for 52 fashion retailing companies based in New Delhi for the year 1998 is given by the following equation:

$$Profits=44.532+55.380 Sales$$

 (21.627) (1.846)

 Std errors of residuals = 105.797

 R Square = 0.902

 Adjusted R Square = 0.897

 F(1,50) = 322.506

The figures in parentheses are standard errors. Sales are measured in lakhs of rupees and profits in thousands of rupees.

1. Interpret the regression. Are the signs in agreement with your intuition?
2. Test the regression coefficient of Sales for significance at the 5% and 1% levels
3. Comment on the overall fit of of the equation
4. The sample average of sales across the 75 companies is 21.4. What is the sample average of the profits across the 75 companies?
5. What is the sample standard deviation of profits across the 75 companies?
6. Suppose profits are measured in lakhs instead of thousands. Describe the effect of this change in units on the constant term, the coefficient of sales, t and F statistics and R Squared.

 (2, 1, 1.5, 1, 2, 2.5)