**Problem Set 1 Date:**

**Recapitulation of Multivariate Descriptive Statistics**

1. The per capita demand for chicken in Kg. (x1), the price of chicken in Rs. Per Kg. (x2), the price of fish in Rs. Per Kg. (x3) and per capita income in thousand rupees at 1993-94 prices (x4) are given for different states of India in the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| x1 | x2 | x3 | x4 |
| 0.05  0.12  0.08  0.01  0.05  0.01  0.02  0.03  0.66  0.01  0.06  0.05  0.13  0.02  0.04  0.02  0.06  0.03  0.20  0.02  0.02  0.02 | 38.60  47.67  40.13  31.00  50.60  52.00  44.50  44.00  0.03  40.00  49.17  44.80  54.38  50.00  56.50  37.50  44.67  43.00  39.10  56.00  67.50  44.00 | 16.91  36.83  27.86  20.17  25.99  31.50  13.07  16.90  0.60  23.09  36.88  37.63  48.27  19.41  52.00  20.18  37.49  21.30  16.83  28.50  27.33  13.75 | 7.42  8.56  5.72  3.04  16.56  9.8  7.84  7.94  6.58  12.18  5.84  6.89  9.13  4.9  7.55  8.96  5.53  6.76  15.19  19.76  18.17  9.78 |

1. Fit a multiple linear regression equation of x1 on x2, x3 and x4. Also obtain a measure of efficacy of this equation.
2. Fit a multiple linear regression equation of x1 on ln x2, ln x3 and ln x4. Also obtain a measure of efficacy of this equation.
3. Compare the regression equation obtained in (a) and (b) in terms of their efficacy.
4. Compute the total correlation coefficient between x1­ and x2.
5. Compute the partial correlation coefficient between x1­ and x2 eliminating the effects of x3 and x4.
6. Comment on the basis of your computations in (d) and (e).