Department of Mathematics
MTL390 (Statistical Methods)
Assignment No. 2

Max. Marks: 10

You may use Matlab/Python/R for the following questions.
Take α=0.05 for all questions.

1. Test the hypothesis that the mean μ is equal to μ_0 (Take any value which is nearer to the mean of data). (1 mark)

2. Test the hypothesis that the variance σ^2 is equal σ_0^2 (Take any value which is nearer to the variance of data). (1 mark)

3. Find the distribution that best fits the data. Perform goodness of fit to test the hypothesis that the distribution of the collected data is same as the distribution you fitted in Assignment 1. (2 marks)

4. Download the regression data from the link http://iitd.info/a3regressiondata. The first column in the data corresponds to the dependent variable and the rest correspond to the independent variables.
   (4a) Perform linear regression and find the point estimates for the coefficients and the intercept. (1 mark)
   (4b) Plot the data and the least squares regression line in the same plot. (1 mark)
   (4c) Find the estimate for σ^2. (1 mark)
   (4d) Calculate R^2 and adjusted R^2. (1 mark)
   (4e) Test the significance of the individual partial slope coefficients, that is, find out if the coefficients are individually equal to zero. (1 mark)
   (4f) Test the overall significance of the estimated multiple regression model, that is, find out if all the partial slope coefficients are simultaneously equal to zero. (1 mark)