**CHRIST (Deemed to be University), Bengaluru – 560 029**

**Mid-Semester Practical Exam**

**(Semester - V)**

**PROGRAMME NAME: CMS/EMS**

**COURSE NAME: LINEAR REGRESSION MODELS MAX.MARKS: 20**

**COURSE CODE: STA531**

A random sample was collected on y, X1, X2, X3, and X4 from various cities of America to study about the health status of the population. The detailed description of the variables is as follows:  
y= death rate per 1000 residents  
X1 = doctor availability per 100,000 residents  
X2 = hospital availability per 100,000 residents  
X3 = annual per capita income in thousands of dollars  
X4 = population density people per square mile

**Data is given in separate excel file**

Use R package to analyze the above data with the following steps and draw your conclusions.

1. Obtain the best subset model using backward elimination method to estimate the death rates.
2. Establish the linear relationship between death rate and various regressors.
3. Test the significance of the regression coefficients at 5% of level of significance.
4. Obtain the predicted death rates and check whether the sum of the observed values and expected values is approximately equal.
5. Obtain the adjusted coefficient of multiple determination.

The evaluation pattern is as follows:

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| Section | Parameters | Marks |
| A | Objective/Aim | 2 |
| B | Analysis | 5 |
| C | Interpretation | 10 |
| D | Timely submission | 3 |
| Total |  | 20 |