Last updated on October 9, 2023

BM5033 Statistical Inference Methods in Bioengineering

Assignment 3

To be submitted before the class on 16th Oct. **Total marks: 100**

Instructions

1. You can use R for this assignment. As a part of the answer to the question also copy the R code if you have used it.
2. This assignment has to be submitted in PDF format. Answers are supposed to be **typed** and **NOT** handwritten.
3. The data for this assignment can be downloaded from **this link**.
4. Please name the file containing your answers <Your-Roll_No>.pdf and upload it **here**.
5. You are expected to work on these problems on your own. **Any reasonable signs of 'copying/plagiarism' will attract penalties.**

Questions

This assignment is different from the earlier assignments with it being relatively open-ended. Only datasets and their description are provided without any specific questions. The main objective of this assignment is for you to analyze the data, identify appropriate statistical tests, and make statistical conclusions.

1. The first data set is cats . The heart and body weights of male and female cats used in some experiment. The cats were all adults and over 2 kg body weight. The dataset contains the following columns
   - Sex: Factor with levels "F" and "M".
   - Bwt: body weight in kg.
   - Hwt: heart weight in kg.
2. Seven specimens were sent to 6 laboratories in 3 separate batches and each analysed for an analyte. Each analysis was duplicated. The dataset contains the following columns
   - Lab: Laboratory, L1, L2, . . . , L6.
   - Spc: Specimen, S1, S2, . . . , S7.
   - Bat: Batch, B1, B2, B3 (nested within Spc/Lab),
   - Conc: Concentration of Analyte in g/kg.