**Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU)**

**Mid-Term Exam**

Date: 29-10-2024

**Marks: 30, Time: 2.0 Hour**

1. **Prepare a bar plot using the supplied dataset containing the following properties-**
2. Consider ‘amendment’ as a factor/treatment/independent variable and lead/cadmium/nikel/chromium as dependent variable.
3. Insert error bar, chart title as ‘effect of different amendments on lead/cadmium/nikel/chromium, xlab as ‘different amendments’ and ylab as ‘lead/cadmium/nikel/chromium concentration (ppm)’
4. Perform ANOVA test and Tukey HSD test and insert significant lettering in the bar plot.
5. Save/export the final graph as JPEG file
6. **Prepare a boxplot using the supplied dataset containing the following properties-**
7. Consider ‘fertilizer’ and ‘amendment’ as a factor/treatment/independent variable and lead/cadmium/nikel/chromium as dependent variable (must be different than question 1).
8. Place the amendment factor in x axis and group/fill by fertilizer factor
9. Insert error bar, chart title as ‘effect of different amendments on lead/cadmium/nikel/chromium, xlab as ‘different amendments’ and ylab as ‘lead/cadmium/nikel/chromium concentration (ppm)’
10. Perform ANOVA test and Tukey HSD test and insert significant lettering in the boxplot.
11. Save/export the final graph as JPEG file

Email your command script (as R file/word file) along with final graphs to [humayun@bsmrau.edu.bd](mailto:humayun@bsmrau.edu.bd) immediate after finishing the exam (not more than 5 minutes).

\*\*\*\****Don’t forget to mention your name and registration number in your email***\*\*\*\*