**Homework 14**

**Your student ID #**

Based on the paper “Comparing multiple comparisons: practical guidance for choosing the best multiple comparisons test” by Midway et al. (2020), answer the following five questions (provide 3 – 5 sentences for each answer).

1. **Explain the significance of Multiple Comparisons Tests (MCTs) in statistical analysis and why they are essential following an ANOVA.**
   * *Hint: Discuss how ANOVA indicates the presence of significant differences but does not specify which groups are different.*

**Answer)**

1. **Compare and contrast the Bonferroni correction and the Benjamini-Hochberg procedure in terms of their approach to controlling error rates in multiple comparisons.**
   * *Hint: Focus on the differences in how they adjust the significance threshold and their impact on Type I and Type II errors.*

**Answser)**

1. **Describe the simulation study conducted by the authors. What were the main findings regarding the performance of the nine common MCTs under different data scenarios?**
   * *Hint: Summarize the setup of the simulation, including the types of errors evaluated and the main conclusions about the robustness and error rates of the tests.*

**Answser)**

1. **Why do the authors recommend Scheffé’s S test and Tukey’s HSD for different types of comparisons? Provide examples of scenarios where each test would be appropriately applied.**
   * *Hint: Discuss the specific conditions under which each test is preferred and provide practical examples of their application.*

**Answser)**

1. **What are the primary considerations a researcher should take into account when selecting an MCT for their study, according to Midway et al.?**
   * *Hint: Consider factors such as planned vs. unplanned comparisons, parametric vs. non-parametric data, and the number of groups and sample sizes.*

**Answser)**