PW SKILLS

Assignment Code: DA-AG-006

Applied Statistics and Inference| **Assignment**

Instructions: Carefully read each question. Use Google Docs, Microsoft Word, or a similar tool to create a document where you type out each question along with its answer. Save the document as a PDF, and then upload it to the LMS. Please do not zip or archive the files before uploading them. Each question carries 20 marks.

Total Marks: 200

Question 1 : What are Type I and Type II errors in hypothesis testing, and how do they impact decision-making?

Answer:

Question 2:What is the P-value in hypothesis testing, and how should it be interpreted in the context of the null hypothesis?

Answer:

Question 3:Explain the difference between a Z-test and a T-test, including when to use each.

Answer:

Question 4:What is a confidence interval, and how does the margin of error influence its width and interpretation?

Answer:

Question 5: Describe the purpose and assumptions of an ANOVA test. How does it extend hypothesis testing to more than two groups?

Answer:

Question 6: Write a Python program to perform a one-sample Z-test and interpret the result for a given dataset.

Answer:

Question 7:Simulate a dataset from a binomial distribution (n = 10, p = 0.5) using NumPy and plot the histogram.

Answer:

Question 8: Generate multiple samples from a non-normal distribution and implement the Central Limit Theorem using Python.

Answer:

Question 9: Write a Python function to calculate and visualize the confidence interval for a sample mean.

Answer:

Question 10: Perform a Chi-square goodness-of-fit test using Python to compare observed and expected distributions, and explain the outcome.

Answer: