COLLEGE OF STATISTICS & ACTUARIAL SCIENCES
UNIVERSITY OF THE PUNJAB, LAHORE

Class: **BS Statistics** LAB: **NumPy**
Module Leader: **Dr. Hakeem-ur-Rehman** Module: **Python for Data Analysis**

Name: _____ Roll #: _____

Basics of NumPy

Question 1: Import the NumPy library and create a NumPy array containing the integers from 1 to 10. Print the array.

Question 2: Create a 3x3 NumPy array filled with zeros and print it.

NumPy Array Operations

Question 3: Create two NumPy arrays of the same shape and perform element-wise addition on them.

Question 4: Create a NumPy array with values from 1 to 10 and calculate the mean, median, and standard deviation of the values.

Indexing and Slicing

Question 5: Create a NumPy array containing the integers from 1 to 20. Slice it to print the even numbers from the array.

Question 6: Create a 2D NumPy array and print the last row and last column of the array.

NumPy Functions

Question 7: Create a NumPy array with random integers between 1 and 100. Find the maximum and minimum values in the array.

Question 8: Create a NumPy array and find the unique values in the array.

NumPy Matrix Operations

Question 9: Create two NumPy matrices and perform matrix multiplication on them.

Question 10: Create a square NumPy matrix and calculate its determinant.

NumPy Broadcasting

Question 11: Create a NumPy array and add a scalar to all its elements.

Question 12: Create a 2D NumPy array and add a 1D array to each row.

NumPy Statistics

Question 13: Generate a NumPy array of random integers and calculate the mean, median, standard deviation, and variance of the values.

Question 14: Create a NumPy array and find the 75th percentile and cumulative sum of the values.

Question 15: Create a NumPy array and find the absolute difference between each element and the mean of the array.

Question 16: Generate a NumPy array of random numbers and find the mode of the values.

NumPy Advanced Operations

Question 17: Create a NumPy array and reshape it into a 3x4 matrix.

Question 18: Create a NumPy array and find the indices of the maximum and minimum values in the array.

Advanced NumPy Functions

Question 19: Create a NumPy array and sort it in ascending order.

Question 20: Create a NumPy array and find the unique values in the array.

Question 21: Create a NumPy array and find the unique values and their counts.