MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
NAAC Accredited with A++ Grade
Department of Computer Science and Engineering

Course Title: Data Science **Course Code:** 150511

Assignment-2

Numpy

Instruction: Write Python code

Question 1:

Title: Array Manipulation

Description: Create a 2D NumPy array with shape (3, 4) containing consecutive integers starting from 1. Reshape the array to have shape (2, 6).

Question 2:

Title: Statistical Operations

Description: Generate a random 1D NumPy array of size 20 with values ranging from 0 to 50. Calculate the mean, median, and standard deviation of the array.

Question 3:

Title: Broadcasting and Element-wise Operations

Description: Create a 3x3 matrix with values 1, 2, and 3 along its diagonal. Subtract the mean of each row from the entire row.

Question 4:

Title: Masking and Filtering

Description: Given a 1D NumPy array, find and print all values greater than the mean of the array.

Question 5:

Title: Stacking and Splitting

Description: Create two 2D arrays with the same number of columns. Stack them vertically and then split the resulting array back into the original two arrays.

Question 6:

Title: Boolean Indexing

Description: Create a 1D NumPy array with random integers between 0 and 10. Replace all values greater than 5 with 0.

Question 7:

Title: Reshaping and Transposing

Description: Create a 2D NumPy array with shape (2, 3) and then transpose it to have shape (3, 2).

Question 8:

Title: Advanced Indexing

Description: Given a 2D NumPy array, extract a new array containing elements from the second and third rows and the first and third columns.

Question 9:

Title: Element-wise Arithmetic

Description: Create a 2D NumPy array with random integers between 1 and 10. Add 5 to all even numbers and subtract 3 from all odd numbers.

Question 10:

Title: Matrix Multiplication

Description: Perform matrix multiplication between two given 2D NumPy arrays, and then find the sum of the resulting matrix's diagonal elements.