Python Modules Assignment

Part A – Creating & Importing Your Own Modules

1. Create a file `math_utils.py` with functions:
   - `add(a, b)` → returns sum
   - `subtract(a, b)` → returns difference

   Import this module into another file and use its functions.
2. Write a module `string_utils.py` that has:
   - `is_palindrome(word)` → checks if word is palindrome
   - `reverse(word)` → returns reversed string

   Import and test it in another script.
3. Create a module `geometry.py` that contains functions to calculate:
   - Area of a circle
   - Perimeter of a rectangle

   Use it inside another script.
4. Make a module `greetings.py` with function `say_hello(name)` that prints `"Hello <name>"`. Import and call it in another script.
5. Create a **package** `shapes/` with two modules:
   - `circle.py` (area, circumference)
   - `rectangle.py` (area, perimeter)

   Import them in a main program and test.

Part B – Using Python Built-in Modules

1. Use the `math` module to:
   - Find square root of 64
   - Compute factorial of 5

- Get value of π

2. Use the `random` module to:
   - Generate a random number between 1 and 100
   - Shuffle a list of numbers
   - Pick a random element from a list
3. Use the `datetime` module to:
   - Print today's date
   - Print current time
   - Get yesterday's date
4. Use the `os` module to:
   - Print the current working directory
   - Create a new folder `test_folder`
   - List all files in the current directory
5. Use the `sys` module to:
   - Print the version of Python being used
   - Print the path where modules are searched
   - Exit the program using `sys.exit()`

Part C – Standard Library Mini Projects

1. Write a program that generates **6 random lottery numbers** using `random.sample`.
2. Write a program that counts the number of **lines, words, and characters** in a file using `os` and `open`.
3. Create a program that asks the user for a date (YYYY-MM-DD) and prints the **day of the week** using `datetime`.
4. Write a script that prints the **current system platform** and **Python version** using `sys`.

5. Make a script that uses the `calendar` module to print the calendar of the current month.