

TILAK MAHARASHTRA VIDYAPEETH, PUNE
MASTER OF SCIENCE (DATA SCIENCE) (768)
EXAMINATION : JANUARY-2026
SEMESTER - I
Sub : Python Programming (76825 -101)

Date : 6/01/2026
Total Marks : 60
Time: 10.00 am To 12.30 pm

Instruction:

1. All questions are compulsory unless and otherwise stated.
 2. Bold figures to the right of every question are the maximum marks for that question.
 3. Candidates are advised to attempt questions in order.
 4. Answers written illegibly are likely to be marked zero.
 5. Use of scientific calculators, Log tables, Mollier Charts is allowed.
 6. Draw neat and labelled diagram wherever necessary.
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Q. 1. Answer the following in 2-3 lines. (Any 5) (10)

1. What is a Python set, and what are its characteristics.
2. Explain the difference between list, tuple, and set.
3. Explain the difference between global and local variables in Python.
4. What is the purpose of the `__init__` method in a Python class.
5. What is the purpose of Python's lambda function?
6. What is the difference between `is` and `==` operators.
7. What is a Python module and a package?

Q. 2. Answer the following in short. (Any 4) (20)

1. Write a Python program to find the factorial of a number using recursion.
2. Explain Python exception handling with an example using `try`, `except`, and `finally`
3. Demonstrate list comprehension with an example to create a list of squares of numbers 1–10.
4. Explain Python file handling modes.
5. Write a Python program to merge two dictionaries
6. Explain the use of Python's `map()`, `filter()`, and `reduce()` functions with examples.

Q. 3. Answer the following in detail. (Any 3) (30)

1. Explain Object-Oriented Programming in Python. Discuss classes, objects, constructors, and inheritance with examples.
 2. Write a Python program to perform matrix operations (addition, multiplication, transpose) using NumPy. Explain each operation.
 3. Explain Python's Pandas library. Discuss DataFrame creation, indexing, slicing, and handle missing data, and calculate summary statistics
 4. Write a Python program to manipulate strings: count vowels, reverse a string, and check for palindrome. Explain each step.
 5. Write a Python program to perform data visualization using Matplotlib: line plot, bar chart, and histogram with explanation.
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