

INSTITUTE OF ENGINEERING AND TECHNOLOGY LUCKNOW (UP)
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

B.Tech. CHE / CE

(SEM IV) Even Semester 2025-26

Class Test - 1

Subject: PYTHON PROGRAMMING

Max Marks: 20

Subject Code: INC-402

Time: 1 hr

- 1) a) Discuss any 5 key features that make it a popular programming language today. (2.5)
b) List 5 rules and conventions for naming variables. (2.5)
- 2) a) Explain the difference between identity and comparison operators with example. (2)
b) Explain what goes on behind the scenes when your computer runs a Python program with a diagram. (3)
- 3) Write a Python program to print the Fibonacci series up to n terms, where n is provided by the user as input. (4)
- 4) Refer the below code snippet to answer the questions that follow:

```
for i in range(1, 6):
    for j in range(i):
        if i+j > 5:
            break
        if i+j < 2:
            pass
    print(i+j, end=" ")
print()
```

 - a) What is the output of the code? (2)
 - b) Rewrite the above code using a while loop. (3)
 - c) What will be the output if 'print(i+j, end=" ")' is replaced with 'print(type(i+j))'? (1)

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B.TECH.
M IV) EVEN SEMESTER EXAMINATION 2024-25
PYTHON PROGRAMMING

[TIME: 3 hrs.]

[Max. Marks: 70]

Note: Attempt All Questions. All Question carry equal marks.

Q1. Answer ALL parts.

- (a) How does Python contribute to fields such as automation, web technologies and data science? 3.5
- (b) Explain the different data types in Python. Provide examples of each. 3.5
- (c) Why is indentation crucial in Python programming? Provide an example of how a block is structured. 3.5

OR

- (d) Discuss the concept of type conversion in Python. 3.5
- (d) Write a python program to check whether a string is a palindrome or not.

OR

Write a Python program to demonstrate the use of logical operators (and, or, not) with appropriate examples. 3.5

Q2. Answer ALL parts.

- (a) Write a menu-driven Python program using conditional statements that allows the user to choose and perform one of several basic math operations (add, subtract, multiply, divide). 7
- (b) Describe lambda function. Write a Python program using a lambda function and map() to multiply each element of a given list by 3.

OR

Write a program to print the following pattern.

```

$$$ $
$ $
$ $
$ $
$$$$ $
    
```

7

Q3. Answer ALL parts.

- (a) Illustrate various string manipulation operations in Python with suitable examples. Write a Python program to count the frequency of each character in a given string.

OR

Write a python program for the instructions as given below:

7

- i) Take two list of integers as input.
- ii) Merge both list into one list
- iii) Display the list
- iv) Find the sum and average of the list elements
- (b) Discuss any five Dictionary methods and demonstrate their usage with appropriate code.

OR

Demonstrate the concept of tuple packing and unpacking in Python with proper syntax and examples.

7

Q4. Answer ALL parts.

(a) Explain different file modes in Python ('r', 'w', 'a', 'r+', etc.) with examples.

7

OR

Describe error handling in file operations using try-except blocks. Provide a code example.

(b) What are the different file modes in Python? Write a Python program to search for a specific word in a file and print the lines that contain that word.

7

Q5. Answer ALL parts.

(a) Mention core functionalities of numpy and pandas. Write a Python program using numpy to create a matrix and perform matrix multiplication with another matrix.

7

OR

What are some common uses of numpy in data analysis? Explain the difference between a Python list and a NumPy array.

(b) Explain the process of creating GUI applications in Python using Tkinter, highlighting the use of widgets, event handling, and layout management.

7

OR

Discuss the role of IDEs in Python programming. How do features like debugging, code completion, and GUI design tools enhance development efficiency?

CO-BL Mapping of the Question Paper

| EVEN Semester Examination 2024-25 | | | |
|-----------------------------------|-------|----|----|
| Subject Code: INC-402 | | | |
| Subject Name: PYTHON PROGRAMMING | | | |
| Q.No. | Marks | CO | BL |
| 1(a) | 3.5 | 1 | 1 |
| 1(b) | 3.5 | 1 | 2 |
| 1(c) | 3.5 | 1 | 2 |
| 1(d) | 3.5 | 1 | 3 |
| 2(a) | 7 | 2 | 3 |
| 2(b) | 7 | 2 | 4 |
| 3(a) | 7 | 3 | 4 |
| 3(b) | 7 | 3 | 4 |
| 4(a) | 7 | 4 | 2 |
| 4(b) | 7 | 4 | 3 |
| 5(a) | 7 | 5 | 4 |
| 5(b) | 7 | 5 | 3 |