KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2023

July -23, 023

Level : B.Pharm.
Year : I
Time : 2 hrs. 30 mins.

Course : COMP 117
Semester : II
F. M. : 40

SECTION "B"
[6Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. What is a flowchart, and how does it aid in the development of a program? Provide an example.

2. How do you take input from the keyboard in Python? Provide an example code snippet.How do comments contribute to code readability and maintainability?

3. Discuss the membership operators in Python. How are they used to check membership in sequences? Give examples using a tuple.

4. What are lists in Python? Explain four operation related to a list as a collection data type.

5. How does the try-except block work to handle exceptions in Python? Provide an example.Discuss the role of the finally block in exception handling.

6. What are the considerations for choosing between a count-controlled loop and a condition-controlled loop in Python? How can you achieve the same functionality of a for loop using a while loop in Python? Provide an example.

7. What is the concept of a module in Python programming? Write a program that utilizes a module to perform the task of adding five integer numbers.

SECTION "C"
[2 Q. × 8 = 16 Marks]

Attempt *ANY TWO* questions.

8. Discuss the concept and importance of function parameters and arguments in Python. Explain the difference between a parameter and an argument, and how they are used in defining and calling functions. Additionally, explain the purpose and behavior of a return statement in a function. Finally, discuss at least three advantages of using functions in Python programming, emphasizing their role in code organization, reusability, and enhancing readability. Support your answer with relevant examples.

9. a. Discuss some features of Numpy and Matplotlib libraries. [4]

b. Consider the following Python code snippet:

```
def power(base, exponent):
    if exponent == 0:
        return 1
    elif exponent > 0:
    return base * power(base, exponent - 1)
else:
    return 1 / power(base, -exponent)
```

Based on the given code, answer the following questions:

i. Describe the purpose of the power() function. Explain its input parameters and the value it returns. [1]

ii. Discuss the recursive process used by the power() function to calculate exponentiation. Explain how the function breaks down the problem into smaller subproblems and combines the results. [2]

iii. Explain the significance of the base case in the power() function. How does it ensure the termination of the recursion? [1]

10. Write a program that asks the user to enter a series of 20 numbers. The program should store the numbers in a list. Afterwards, the program should present the user with the following options:

a. Calculate the sum of the numbers.
b. Find the highest number in the list.
c. Calculate the total of the numbers.
d. Calculate the average of the numbers.

The program should then ask the user to choose one of these options by entering the corresponding letter (a, b, c, or d). Finally, the program should perform the selected calculation and display the result. You should implement the user-defined function to perform this task.