Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination June 2025

Roll no.....

Name of the Course and semester: DIPLOMA CSE IV
Name of the Paper: PYTHON PROGRAMMING
Paper Code: DTCS402

Time: 3 hour | Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1.	(2X10=20 Marks)	CO1
a.	What is meant by Python Philosophy? What are the basic differences between Python 2 and Python 3? List at least two differences in syntax and their significance.	
b.	Why Python is considered a high-level language? Explain its features that distinguish it from low-level programming languages.	
c.	Create a simple Python program that calculates the body mass index (BMI) from user input (weight and height). Explain how the formula is applied in the code and its practical use.	
Q2.	(2X10=20 Marks)	CO2
a.	List the data types available in Python. Provide an example for each type.	
b.	What is the difference between a list and a tuple in Python? When would you prefer to use one over the other?	
c.	Write a python program to show the usage of for loop to retrieve the elements of a dictionary. Also write a piece of Python code to check whether a key exists in the dictionary or not.	
Q3.	(2X10=20 Marks)	CO3
a.	What is the syntax for defining a function in Python? Write a simple function to calculate factorial of a number.	
b.	What is the difference between global and local variables in Python? Provide an example.	
c.	Write a Python program that takes the age of a person and categorizes them into age groups based on the following conditions: i. Child (0 - 12 years): Print: "You are a child." ii. Teenager (13 - 19 years): Print: "You are a teenager." iii. Adult (20 - 59 years): Print: "You are an adult." iv. Senior (60+ years): Print: "You are a senior." v. If the person's age is negative or greater than 150, print: "Invalid age input."	
Q4.	(2X10=20 Marks)	CO4
a.	What is a class in Python? Define a simple class Car with the attributes model and color.	
b.	Explain the concept of inheritance in Python. Provide an example using a base class Animal and derived class Dog.	
c.	Write a Python class Student that has attributes name, roll number, and marks. Include methods to display the student's details and calculate the grade based on marks.	
Q5.	(2X10=20 Marks)	CO5
a.	What is NumPy, and why is it used in Python? Give an example of creating a NumPy array and performing basic operations like sum and average.	

End Term (Even) Semester Examination June 2025

b.	Explain how to open and write to a file in Python. Provide a code example to write a list of strings to a text file.	
c.	Write a Python program using Tkinter to create a basic calculator with buttons for addition, subtraction, multiplication, and division.	